

KOGRUKLUK WEIR SALMON ESCAPEMENT STUDY

1988

By

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Regional Information Report¹ No. 3A89-09

Alaska Department of Fish and Game
Division of Commercial Fisheries, AYK Region
333 Raspberry Road
Anchorage, Alaska

April 1989

¹ The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished division reports. These reports frequently serve diverse and ad hoc informative purposes or archive basic uninterpreted data. To accommodate needs for up-to-date information, reports in this series may contain preliminary data.

ACKNOWLEDGEMENTS

The data on which this report is based was gathered through the dedicated service of Department of Fish and Game seasonal employees. Special thanks are due Kevin MacDonald and Jon Becker for the dedicated operation of the project. Thanks also to all of the staff in the Bethel Fish and Game office who have helped with the often difficult and always critical logistics support for the project. Linda Brannian provided the explanation of sex, length and age sample objectives. Special thanks is owed to Larry Buklis for his support and critical review of the manuscript.

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ABSTRACT

The KogrukluK Weir project provides the most reliable chinook, sockeye, coho and chum salmon escapement data in the mid- and upper-Kuskokwim River drainage. Data has been collected since 1976. The KogrukluK River migration timing database for the major salmon species was expanded after the 1988 season and used to calculate revised historical escapement estimates, as well as, 1988 final escapement estimates.

The weir was operated in 1988 from 5-31 July and 3 August to 17 September. Estimated KogrukluK River salmon escapements were 11,194 chinook, 6,158 sockeye, 12,799 coho, and 41,881 chum. The dominant age classes from age, length and sex (ALS) samples were ages 1.3, 1.3, 2.1, and 0.3 for chinook, sockeye, coho, and chum salmon, respectively. ALS sample sex ratios were 0.60:1 (n=868), 0.90:1 (n=328), 0.86:1 (n=589), and 0.55:1 (n=621) for chinook, sockeye, coho, and chum salmon, respectively. Length statistics are presented. During the operating period 1,793 chinook, 326 sockeye, and 7,983 chum salmon carcasses were removed from the weir.

Salmon escapements were estimated for 1987 using a ratio of unknown 1987 escapements to known 1987 aerial survey results and known 1988 escapements to known 1988 aerial survey results. KogrukluK River escapement estimates for 1987 were 4,063 chinook, 973 sockeye, and 17,422 chum salmon.

Mean noon air and water temperatures were 15.6 C and 10.7 C, respectively. The mean standardized stream level was 2.715 m, and total precipitation was 21.9 cm.

INTRODUCTION

Description of Area

The Kogrukluk Weir project is located in the remote upper reaches of the Holitna, a major tributary to the Kuskokwim River. The Holitna River headwater is formed at the confluence of the Kogrukluk and Chukowan Rivers one mile above the village of KashegeloK in the central Kuskokwim River drainage (Figure 1) in western Alaska.

The Kogrukluk River is formed by surface runoff from the north side of the plateau dividing the Tikchik Lakes and Nushagak River system from the Kuskokwim River system and from numerous streams which originate in the Shotgun Hills to the east. From a point about five miles from Nishlik Lake, the uppermost lake of the Tikchiks, the Kogrukluk River flows northerly for about 43 miles before it joins the Chukowan River. Shotgun Creek, a major tributary, joins the Kogrukluk about two miles above the Chukowan confluence (Figure 2).

The Kogrukluk River is characterized by swift flowing, clear water over its entire length. White spruce, birch and cottonwood forest exists along the banks in the lower fifteen miles of the stream, and frequent high runoff events in the summer erode the bank topsoil in that area and may cause considerable turbidity.

Salmon Resources

The waters of the Kuskokwim River drainage produce all five North American species of Pacific salmon (*Oncorhynchus* spp.). The species of primary commercial and subsistence importance in the region are chinook (*O. tshawytscha*), chum (*O. keta*), and coho salmon (*O. kisutch*). The traditional native subsistence fishery in the Kuskokwim area may account for as much as a third of the chum salmon harvest and half or more of the chinook salmon harvest in any year. Coho salmon have not been traditionally important in the local subsistence economy. The sport fishery in the Kuskokwim area is undeveloped, and the commercial fishery is primarily accountable for the remainder of the harvest of chinook and chum salmon. The Kuskokwim commercial coho salmon fishery is in its late development stage, and the stock has proven to be capable of sustaining substantial and economically important harvest levels over the past ten years. Pink salmon (*O. gorbuscha*) are economically unimportant in the Kuskokwim area.

The Kogrukluk River is a major salmon producer in the Holitna drainage. The river is capable of significant production of chinook, chum, and coho salmon. In some years relatively large numbers of sockeye salmon (*O. nerka*) may be produced. The relative abundance of pink salmon is unknown in the Kogrukluk River, but adults are observed in the stream in most years.

Management Needs

The abundant quantities of economically valuable Pacific salmon which are produced in the Kuskokwim River drainage require monitoring by professional fisheries resource managers in order to optimize natural reproduction and allowable harvest. Subsistence and commercial fishermen who live along the Kuskokwim River place major cultural and economic importance upon harvests of chum and chinook salmon. The population of the Kuskokwim area is rapidly expanding. The resulting increase of pressure on the salmon resource to provide cash and subsistence food and to maintain the accustomed lifestyle of the native people is accompanied by growing interest in more efficient harvest techniques and equipment. In other fisheries, this combination has proven to be a forewarning of resource over-exploitation resulting in depletion of fish stock abundance.

Obtaining salmon escapement data from Kuskokwim River tributaries is necessary for the evaluation of the effectiveness of regulatory actions taken in the fishery. Currently there are two salmon escapement monitoring projects in the Kuskokwim drainage: the Aniak Sonar project which is designed to provide inseason chum salmon escapement data, and the Kogrukluk Weir project which provides escapement data for all indigenous salmon species except pink salmon.

The Holitna River is thought to be the most important source of production of Kuskokwim chinook, chum and coho salmon. Recorded evidence of this has accumulated since 1961 (Schneiderhan 1983) when the earliest aerial survey of the Holitna River was documented. The apparent importance of the Holitna River as a salmon producer and the necessity to more closely monitor escapements of spawning salmon led to a series of attempts to establish a permanent salmon escapement monitoring project in the Holitna drainage. The Kogrukluk Weir project is the result of those attempts.

Effective harvest regulation depends on stock assessment. Test fishing near Bethel provides a good index of total returns and escapement for the drainage, but is incapable of discriminating among the stocks of salmon which spawn in various portions of the drainage. These stocks are extremely important to Kuskokwim River subsistence users, and their proper conservation is necessary for continuation as a viable, renewable resource capable of supporting new and traditional economies.

A chinook salmon conservation problem exists for Kuskokwim River stocks. Recent weak chinook salmon returns have become cause for concern by inhabitants of the Kuskokwim area, as well as Department of Fish and Game staff. Conservation of chinook salmon stocks requires accurate knowledge of escapements in order to adequately justify limiting harvests. Accurate escapement data reduces the risk of adversely impacting local economies through overly conservative management practices. People in the Kuskokwim area are increasingly perceptive of the need for more and better information about upriver salmon stocks and have greater confidence in management decisions which are supported by reliable data. Annual assessment of the Kogrukluk River salmon escapements has become an important priority in the Department salmon management and research programs.

Project History

The need for accurate assessment of salmon escapements in the mid- and upper-Kuskokwim drainage stimulated the development of a salmon counting tower on the Kogrukluk River in 1971. The tower was located slightly more than a mile above the confluence of Shotgun Creek.

Inadequacies of the tower site and the absence of a more suitable nearby tower site resulted in the changeover between 1976 and 1978 from a tower counting project to a weir counting project. The weir was located downstream from the confluence of Shotgun Creek and about a mile upstream of the confluence of the Chukowan River.

From 1976 to 1978, the tower and weir were both operated to gather data for relating the results of the two projects. During that time, only the 1978 operations provided an acceptable set of data from each project.

During the early years of the project, coho salmon escapements were not monitored. Beginning in 1981 the weir was operated from June to October and coho as well as chinook, sockeye, and chum salmon data was obtained.

Objectives

The following objectives have been established for the Kogrukluk Weir project:

1. Provide daily counts of the spawning escapement of chinook, sockeye, coho, and chum salmon by sex.
2. Describe the migratory timing of chinook, sockeye, coho and chum salmon spawning escapements.
3. Describe the age, sex and size composition of the chinook, sockeye, coho and chum salmon spawning escapements.
4. Index gill net fishing intensity by comparing the frequency of gill net marked salmon at the weir with prior years.
5. Estimate carcass wash out rate and timing by species and sex.
6. Monitor variability in stream hydrologic conditions and atmospheric conditions to provide information relating to potential environmental effects on salmon production.

METHODS

Weir Construction and Maintenance

The weir consisted of black iron pipe pickets held in position by angle iron stringers, ten feet in length, which had been perforated on one side to receive about 45 pickets (3/4" black iron pipe). The stringers were overlapped and braced by "A" shaped steel pipe support pods at each ten foot juncture to span the 230 foot wide river. The triangular "A" pods were constructed of 1- 1/2" black iron pipe (schedule 80) and Kee Klamps (TM). The trap was constructed of picket pipes and stringers to dimensions of 6' x 8' x 4' deep. It had a funnel shaped entrance and was placed just upstream of an opening in the weir (Figure 3). All salmon except pink had to pass through the trap before proceeding upstream. Other details of weir construction may be found in *Ignatti Weir Construction Manual* (Baxter 1981).

Salmon Counts

Salmon were enumerated from an observation position on top of the trap. Two to four pickets were pulled out of the side of one upstream corner of the trap to allow salmon to pass. Visibility and definition were enhanced by yellow plywood flasher panels placed on the stream bottom at the exit to the trap. Twelve data categories were tallied on tally counters mounted on a pedestal near the counting position. Categories were the numbers of 1) male chinook, 2) female chinook, 3) male chum, 4) female chum, 5) male sockeye, 6) female sockeye, 7) gill net marked male chinook, 8) gill net marked female chinook, 9) gill net marked male chum, 10) gill net marked female chum, 11) gill net marked male sockeye, and 12) gill net marked female sockeye salmon. During the coho migration, the above data was maintained for the few remaining chinook, sockeye, and chum migrants; however, the primary thrust of the ensuing period was to obtain numbers of 1) male coho, 2) female coho, 3) gill net marked male coho, and 4) gill net marked female coho.

Except between 2400 and 0555 hours, the weir trap was cleared of salmon once or more an hour throughout the day and night. From 2400 to 0555 hours, the trap exit is closed; however, upstream migration of salmon during that time is usually very slow and it is unnecessary to allow passage through the weir. At 0555 hours all salmon in the trap are allowed to proceed upstream and are counted at that time. Those counts are recorded as having occurred during the six hour period 0001 - 0600 hours.

Count data was entered in a field notebook at the end of each six hour period. The following data was recorded: date, six-hour period (1,2,3 or 4), species, sex, count, and number with gill net marks. All data was recorded as specified by the project operational plan (POP, Schneiderhan 1987b).

Migration Timing Database

At the conclusion of the field season, the historic salmon count data was subjectively expanded for some years in order to produce a migration timing database with as many years represented as possible. Chinook, sockeye, coho, and chum salmon counts were examined. After the subjective expansion was performed, the migration timing database consisted of nine years of data for chinook, sockeye, and chum salmon (1976, 1978, 1979, 1981, 1982, 1984, 1985, 1986, and 1988) and eight years of data for coho salmon (1981-1988). Daily and daily cumulative proportions were then calculated using the expanded data. Daily minimum, average, and maximum cumulative proportions were calculated and extracted from the data, and the resulting data sets were used to calculate the mean dates of the minimum, average, and maximum time series of daily cumulative proportions.

The three time series models which resulted for each species were taken to represent normal (average model), early (maximum model), and late (minimum model) timing scenarios for the species. The mean dates of each year of expanded data was then examined for each species, and the migrations in each year were characterized as early, normal, or late depending upon the relationships of the various mean dates to the grand mean date for each species.

All historic counts were then expanded a second time by calculating missing data using the new migration timing model which was most appropriate to the timing determination for a given year of a given species. The resulting revised escapement estimates were tabulated, and appropriate changes were made to tables and figures presented in this report.

Age, Length and Sex Samples

Sample size objectives were 55 chinook, 30 sockeye, 30 coho, and 30 chum salmon per day as they migrated upstream through the weir trap. Scale samples, sex and lengths were taken from salmon which were dipped from the trap while it was closed. Sampling generally took place between 0900 and 1500 hours daily. The scales were aged after the season to determine the sample age composition of each species.

Escapement sampling was performed by keeping the trap exit closed and allowing the trap to fill with salmon from downstream of the weir. When an adequate number of fish were in the trap, the entrance was also closed. Salmon were removed from the trap one at a time. Length and sex was recorded and scales collected and mounted on gummed scale cards. Mideye to fork of tail length (mm) was measured and a scale (three from chinook and coho) from the preferred area (Statewide Stock Biology Group 1984) on the left side of the fish was taken. The salmon was then carefully released on the upstream side of the weir. All salmon were dipped from each trapped sample until daily sample size goals were met or until it was impossible to meet them due to an absence of the appropriate species. All data was recorded as specified by the POP (Schneiderhan 1987b).

Salmon Carcass Counts

Salmon carcasses which washed down the river and were stopped by the weir were counted by species and sex when the weir was cleaned. During periods of moderate to heavy carcass and debris accumulation, the weir was cleaned at least once per day. At other times, one to several days may have elapsed between cleanings. Carcass data for all species was recorded in accordance with the POP (Schneiderhan 1987b).

Data Analysis

Cumulative counts to date and daily inseason estimates of total escapement were calculated daily in the Bethel Fish and Game office. The counts were entered into a Lotus 1-2-3 (TM) worksheet which calculated the two numbers. Daily cumulative proportions by species or species and sex, mean date (Mundy 1982) of migration by species or species and sex, and mean date of carcass washout by species or species and sex were calculated in the Bethel and Anchorage offices after the season data was complete. Scale samples were pressed in acetate and analyzed by the project biologist at the end of the season. Completed OPSCAN forms containing age, sex and length data were processed through the OPSCAN reader in the Anchorage office by the project biologist at the conclusion of the field season. Custom programs and Lotus 1-2-3 macros written by Conrad (1985) were used for the initial analysis of age, sex and length data in OPSCAN output format.

Region wide standards have been set for the sample size needed to describe the age composition of a salmon population. These were applied to the time period or stratum in which the sample was collected. The sample size goals were based on a one-in-ten chance (the precision of the sample) of not having the true age proportion (p_i) within the interval $p_i \pm .05$ for all i ages (the accuracy of the sample). A sample size of 584 fish per stratum was needed for chinook salmon assuming 3 major age classes with minor ages pooled and 14% regeneration rate when 3 scales per fish were collected. A sample size of 450 fish per stratum was needed for chum salmon assuming 2 major age classes with minor ages pooled and no unreadable scales when 1 scale per fish was collected. A sample size of 591 fish per stratum was needed for sockeye salmon assuming 3 major age classes with minor ones pooled and a 15 % regeneration rate when one scale per fish was collected. A sample size of 278 fish per stratum was needed for coho salmon assuming 1 major age class with minor ages pooled and an 11% regeneration rate when 3 scales per fish were collected. Daily project sample goals were established to provide a minimum of one sample stratum per species throughout the season. In years with large escapements, enough samples may be obtained to divide the sample into two or more strata. Sampling of the early and late parts of the migrations did not meet daily sample size objectives.

Brood year weir returns per spawner tables were updated using each year's age composition and escapement data as it became available.

Meteorologic and Hydrologic Factors

Meteorologic and hydrologic factors were measured at noon (1200 hours) each day. Maximum air temperature was measured on the max-min recording thermometer for the preceding day. Minimum air temperature was for the current day. Water temperature was measured with a pocket mercury or alcohol thermometer calibrated in either Fahrenheit or Celsius. Precipitation for the prior 24 hour period was measured using a standard precipitation gauge (10 to 1 ratio). The amount of cloud cover and wind direction and velocity was estimated by the observer.

RESULTS

Appendices A - H contain data from which tables and figures were produced for this report. Some of the appendices are referred to briefly and some are not mentioned in the following text. The order of the appendices generally follows the order of data presentation in the text.

Salmon Counts

Historical escapement estimates were revised (Table 1) using the updated migration timing database. Three migration timing models (time series of cumulative proportions) were developed for each species. The mean dates of the early, normal, and late chinook migration timing models were 8.0 July, 12.9 July, and 17.3 July, respectively (Figure 4). The mean dates of the sockeye models were 8.7 July, 14.2 July, and 21.1 July, respectively. The mean dates of the coho models were 29.1 August, 2.5 September, and 9.5 September, respectively. The mean dates of the chum models were 8.8 July, 13.3 July, and 18.3 July, respectively. The database was also used to produce the final escapement estimates for 1988.

The weir was operated continuously from 5 July to 17 September. Inspection of the data indicated that chinook, sockeye, and chum salmon migrations had attained significant strength by the start of operation, and the coho migration remained fairly strong when high stream flow caused the premature removal of the weir in September. The chinook, sockeye, and chum salmon data was augmented with estimates of daily passage for the period 15 June to 4 July (Table 2). The models used in all three instances were the early daily proportion series presented in Appendices C.5, D.5, and F.5. Coho salmon data was similarly augmented for the period 18 September to 6 October using the normal daily proportion series from Appendix E.5.

Chinook

The estimated chinook salmon escapement (11,194) was 112 percent of the escapement objective (10,000) for the Kogruklu River (Table 3). Assuming that the

preoperational estimates approximate the daily passage of the actual migration, the entry timing was earlier than average (Figure 5). Also assuming the time series of counts is normally distributed, the mean date of weir passage was 8.7 July ($s=7.9$ days).

Sockeye

The estimated sockeye escapement (6,158) was 308 percent of the objective (2,000). Assuming that the preoperation estimates approximate actual migration parameters, the entry timing was earlier than average (Figure 5). Also assuming a normally distributed time series of counts, the mean date of weir passage was 8.6 July ($s=6.7$ days).

Coho

The estimated coho escapement (12,799) was 51 percent of the objective (25,000). Assuming that the postoperation estimates approximate actual migration parameters, the entry timing was about average (Figure 5). Also assuming a normally distributed time series of counts, the mean date of weir passage was 1.9 September ($s=10.5$ days).

Pink

Assuming that the small number (24) of pink salmon which were counted through the weir trap was indicative of migration timing, the mean date of weir passage was 22.0 July ($s=19.0$ days, Table 4).

Chum

The estimated chum escapement (41,881) was 140 percent of the objective (30,000). Assuming that the preoperation estimates approximate actual migration parameters, the entry timing was earlier than average (Figure 5). Also assuming a normally distributed time series of counts, the mean date of weir passage was 9.0 July ($s=7.9$ days).

1987 Escapement Estimates

The weir operation in 1987 failed to provide escapement estimates for chinook, sockeye, and chum salmon (Schneiderhan 1988); however, a good aerial survey of the Kogrukluk River was performed on 27 July 1987. Comparison of the results of a good survey performed on 23 July 1988 to 1988 weir escapement estimates yielded aerial survey expansion factors which were applied to 1987 aerial data to provide the missing escapement estimates. The process resulted in estimated 1987 escapements of 4,063 chinook, 973 sockeye, and 17,422 chum salmon (Tables 1 and 3).

Salmon Carcass Counts

Complete series of carcass data were obtained for chinook, sockeye and chum salmon. Coho carcasses were beginning to accumulate on the weir when operation was terminated. Results for coho salmon are not reported, but the data may be found in Table 5 and Appendix B.

Chinook

A total of 1,336 male and 457 female chinook salmon carcasses were removed from the weir (Table 5). The totals include estimates for the period 31 July to 2 August which were derived using linear methods. The estimated mean date of carcass removal was 2.6 August ($s=7.1$). That was about 23 days after the mean date of migration passage. The lag time for carcass accumulation on the weir in 1984 was also 23 days (Schneiderhan 1985).

Sockeye

A total of 282 male and 44 female sockeye salmon carcasses were removed from the weir (Table 5). The estimated mean date of removal was 12.3 August ($s=7.94$), about 32 days after the mean date of migration passage. The lag time for carcass accumulation on the weir was almost 31 days in 1984 (Schneiderhan 1985).

Chum

A total of 6,638 male and 1,345 female chum salmon carcasses were removed from the weir (Table 5). The estimated mean date of removal was 23.4 July ($s=7.84$), about 12 days after the mean date of migration passage. The lag time for carcass accumulation on the weir was almost 14 days in 1984 (Schneiderhan 1985).

Age, Length and Sex Composition

Chinook

Age, length and sex (ALS) data was obtained from 868 live specimens. The age class composition was age 1.2 (9%), age 1.3 (51%), age 1.4 (31%), and 1.5 (9%). The mean lengths were 561.1 mm, 740.8 mm, 854.6 mm, and 902.5 mm for ages 1.2, 1.3, 1.4, and 1.5, respectively. The female to male sex ratios were 0:1, 0.21:1, 2.03:1, and 8.38:1 for the respective age classes (Table 6). The sex ratio for the sample was 0.60:1 (37% female).

Sockeye

ALS data was obtained from 328 live specimens. Age classes included age 1.2 (2%), age 1.3 (95%), and age 1.4 (3%). Four specimens were age 2.3. The mean lengths were 582.5 mm, 566.0 mm, 557.9 mm, and 558.8 mm for the respective age

classes. The female to male sex ratios were 0:1, 0.90:1, 6:1, and 1:1, respectively (Table 7). The sex ratio for the sample was approximately 0.90:1 (47% female).

Coho

ALS data was obtained from 589 live specimens. The dominant age class was age 2.1 (94%). Thirty specimens (5%) were age 1.1 and seven (1%) were age 3.1. The mean length of the dominant age class was 568.3 mm. The female to male sex ratio was 0.90:1 for the dominant age class (Table 8). The sex ratio for the sample was 0.86:1 (46% female).

Chum

ALS data was obtained from 621 live specimens. The dominant age classes were 0.3 (69%) and 0.4 (29%). Twelve specimens were age 0.5. The mean lengths were 567.4 mm and 582.0 mm for the respective dominant age classes. The female to male sex ratios were 0.61:1 and 0.47:1, respectively, for the dominant age classes (Table 9). The sex ratio for the sample was 0.55:1 (36% female).

Weir-based Brood Year Returns

Chinook

Spawner escapement estimates were apportioned by age class for each year (Table 10). The results were used to calculate the estimated returns above the weir per spawner above the weir (Appendix G). Estimates of catch allocated to the Kogrukluk stock were not included in the calculation of weir return per spawner. Chinook salmon weir returns per spawner were well above simple replacement levels (1.0 return per spawner) for most brood years from 1972 to 1977 (no data for 1974). The 1978 to 1982 brood year returns per spawner have ranged from 0.30 to 0.58, well below the replacement level (Figure 6).

Sockeye

Sockeye salmon spawner escapements were apportioned by age class (Table 11). Sockeye salmon weir returns per spawner were well above the replacement level in all but one brood year from 1976 to 1980. The 1981 and 1982 brood year returns were very weak. They were followed by the very strong 1983 brood year return (Figure 6).

Coho

Escapement and age composition data has not been collected for a sufficient number of years to make the construction of a brood year table meaningful.

Chum

Chum salmon spawner escapement estimates were apportioned by age class for each year (Table 12). Weir returns per spawner were well above replacement for the 1976 brood year (Figure 6). The 1977 to 1980 brood year returns per spawner ranged slightly above replacement (1.07 to 2.12). A very weak return per spawner for the 1981 brood year (0.19) was followed by stronger returns of 0.30 and 1.71 in the 1982 and 1983 brood years, respectively.

Gill Net Marked Salmon

Gill net mark data similar to that presented in this report was recorded in all years of successful project operation; however, only limited attempts have been made to analyze it, and those provided inconclusive results. The relative frequency of gill net marks in 1988 appeared typical of other years. Gill net marks were relatively common on chinook and chum salmon and relatively uncommon on sockeye and coho salmon (Table 13). No attempt was made to estimate the numbers of gill net marked salmon which passed prior to weir installation; therefore, comparisons to total weir counts or to historic data were not made.

Meteorologic and Hydrologic Factors

Meteorologic and hydrologic factors during the operating period are listed in Table 14. This type of data has been recorded each year since the project was initiated in 1976. No attempt has been made to relate meteorologic or hydrologic factors to fish production.

During the period 24 June to 23 September, the mean noon air and water temperatures were 15.6 C and 10.7 C, respectively. The mean standardized stream level was 2.715 m, and total precipitation was 21.9 cm (Table 14).

DISCUSSION

Management Applications

Management of the commercial salmon fisheries on the lower Kuskokwim River is more responsive to spawning ground escapement levels because of inseason projection techniques which accept cumulative escapement estimates as input. Prior to 1984, relative escapement success was not known until after aerial assessments were completed, often as late as early August. The chinook, sockeye and chum salmon commercial fisheries are usually concluded by 15 July. Using the estimates provided by daily weir data often enables fair projections of escapements beginning around 5 July. The quality of the projections improves as daily counts accumulate.

As a general rule, the most reliable early projections are obtained when the weir operation begins on or before 1 July. The preferred start up date is 25 June. That allows for documentation of earlier than anticipated migration passage. When operation is not possible until after 1 July, escapement projections using the initially available data are less reliable, because the first component of migration passage is missing from the cumulative total. After sufficient data is available, estimates can be made of the incomplete early data. The cumulative totals can then be adjusted, and more dependable inseason escapement projections can be computed.

It is important to operate the weir during the entire migrations of all species. The accuracy of the inseason projections of escapement abundance depends on the existence of a historic data base that adequately represents all of the timing scenarios that can reasonably be expected to occur.

Migration Timing Database

The migration timing data consists of daily and daily cumulative proportions of estimated weir counts of each species for all years of operation. This data is used to estimate portions of a current migration count which may be missed when the weir is not operating effectively. It is also the basis for inseason estimates of final total season abundance.

During the 1988 salmon season, the useable database consisted of only those years from 1976 to 1984 which had complete or nearly complete count series. For chinook, sockeye, and chum salmon, the years 1976, 1978, and 1984 were judged to satisfy the selection criteria. For coho salmon only 1981 and 1983 data were acceptable.

During the process of analyzing the data contained in this report, it was decided to consider 1985-1988 data for inclusion in the historical timing database. It was further decided to attempt to enhance the data from years with weaker count series in order to benefit from different migration timing scenarios which might result. It was thought that as long as the data enhancement was performed without altering actual daily counts and without overstepping the bounds of factually supported minimum and maximum timing and magnitude limits, the results would represent a reasonable if not an actual timing scenario, and the scenario would be biased toward an actual situation by the weight of the included base of actual daily counts.

Once data enhancement had been extended as far as common sense dictated, a total of nine of the possible thirteen (1976-1988) daily proportion scenarios were eligible for inclusion in the reconstructed migration timing databases for chinook, sockeye, and chum salmon. All eight years (1981-1988) of enhanced coho data provided daily proportion scenarios for the reconstructed coho timing database.

After the data enhancement process was completed, calculations were made of daily proportions, daily cumulative proportions, minimum daily and daily cumulative proportions, average daily and daily cumulative proportions, maximum daily and daily cumulative proportions, mean date of minimum daily proportions, mean date of average daily proportions, mean date of maximum daily proportions, and standard deviations of the mean dates. The essential products of the database are the migration timing models which are graphically represented in Figure 4. Appendices C - F contain the numeric basis and numeric representation of the models.

The utility of the new database is the same as the original. It was applied to 1988 counts to provide the final escapement estimates reported in the results section. It was also applied to all historical counts to generate revised escapement estimates which have been derived using the same criteria. The 1982 chum salmon escapement estimate increased from about 51,000 to nearly 80,000 fish. All other differences between the old and new estimates were relatively small.

Annual Escapements

Chinook

The escapement objective of 10,000 chinook was established in 1983. Based on available data at that time, it was thought to be an escapement level that could ensure continuing population levels sufficient to accomplish future escapement objectives as well as provide an adequate surplus for harvest. Chinook salmon escapement objectives have not been achieved at the weir since 1982 (Figure 7). The chinook escapement objective in 1988 was achieved, although the species was passively managed due to the abundance of chum salmon. Because of the record return of chum salmon, the concurrent chinook and chum fishery was managed to optimize the chum salmon harvest.

Since 1982, Kogrukluk River escapements of chinook and chum salmon have been among the lowest recorded (Figure 8). With five consecutive years of low chinook escapements followed by one adequate escapement and with brood year returns well below the replacement level (0.30-0.58 weir returns per spawner for the 1978-1982 brood years), the short term general outlook is for continued low levels of weir returns.

A counter-indication of further decline in the chinook population comes from the much greater than expected return in 1988. If that trend is sustained, further assessment of escapement objectives and analytic techniques will be necessary.

Sockeye

Sockeye salmon have historically not been important in the Kuskokwim subsistence or commercial economies. Much larger returns in 1986 and 1987 are thought to be a temporary anomaly. However, if future events indicate more of a long term increase in the population of Kuskokwim sockeye salmon, it will be important to identify stocks which are providing the increased production so that escapements

can be monitored and fishing activities can be appropriately regulated. Sockeye escapement estimates for the Kogrukluk River have not shown the dramatic increase (Figure 8) that was indicated by commercial catch statistics in 1986 and 1987. However, the much increased commercial effort in 1988 produced a substantially decreased harvest (from a level of 136,000 in 1987 to 92,000 fish in 1988). There is some aerial survey evidence (Schneiderhan 1987a) that the Stony River drainage may be contributing to whatever increased sockeye production may have occurred.

The weir escapement objective for sockeye salmon (2,000) has been met or exceeded in most years (Figure 7); however, in only two of those years was it greatly exceeded. In light of the low emphasis on the species and its fluctuating status, the objective seems reasonable at this time.

Coho

The escapement objective for coho salmon (25,000) seems reasonable. Since 1981, when escapements were first monitored, the deviation of the escapement from the objective (Figure 7) has ranged high about the same amount as it has low; however, there have been more years when the objective was not achieved than when it was achieved. In the recent four years, an upward trend in escapements culminated with the narrowly achieved objective in 1987. This was followed in 1988 when the objective was under-achieved by a wide margin.

Coho salmon are an economically important species in the Kuskokwim area for which there is little capability to monitor escapements at this time. If the stock were to decline, the Department would have very little ability to take corrective action without resorting to an overly conservative management regime, an option which does not optimize allocation of the resource between users and escapements.

Chum

The chum salmon escapement objective (30,000) seems reasonable. The symmetry displayed in Figure 7 demonstrates that the escapement objective is exceeded as often and by as much as it is fallen short of. Declining escapements in recent years and brood year returns well below replacement levels seem to indicate that the Kogrukluk chum salmon stock may continue to decrease in size. However, the unexpectedly large return in 1988 as indicated by the record commercial harvest and good weir and Aniak River escapement (Schneiderhan 1988) may be a sign that unknown factors are operating to create a healthier than anticipated stock.

Gill Net Marked Salmon

The frequency of gill net marks on the various salmon species passed through the weir would appear to have potential to provide valuable information about changes in the effectiveness of the fishery when gear types or the timing or intensity of the fishery change. However, limited analyses of chinook data have

been inconclusive. Gill net mark data has been collected since the project began in 1976, but only in 1986 and 1987 have attempts been made to use it.

Carcass Removal Timing

A relationship between the timing of carcass removal from the weir and the timing of weir passage is beginning to be defined. If good quality carcass data as well as good quality migration passage data is collected, the relationship may be more strongly defined and used to estimate escapement magnitudes in years when large portions of escapements are not observed.

CONCLUSIONS AND RECOMMENDATIONS

Gill net mark data should be reviewed to determine usefulness. If utility does not include real or potential value to the management effort, collection of gill net mark data should be discontinued.

It is important to collect good quality, complete carcass data whenever possible.

The spawning success of salmon stocks is more meaningfully described in terms of the female component of the escapement and of the resultant returns. When good quality sex ratio data is available for both escapements and returns, it should be used to develop brood year statistics in terms of female returns per female spawner. Female escapement objectives should also be established and used for fisheries management purposes.

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Table 1. Factor table for revision of historical escapement estimates using the 1988 database, Kogrukluk River, 1976-88.

Year	Chinook				Sockeye				Coho a				Chum			
	T	Count	Prop. Missed	Est'd Total	T	Count	Prop. Missed	Est'd Total	T	Count	Prop. Missed	Est'd Total	T	Count	Prop. Missed	Est'd Total
1976	L	5,507	0.0534	5,818	N	2,302	0.0271	2,366					N	8,046	0.0441	8,417
1977	(N)	763	0.6078	1,945	(N)	732	0.5527	1,637					(N)	7,404	0.6192	19,444
1978	N	13,132	0.0345	13,601	N	1,656	0.0255	1,699					N	47,099	0.0390	49,010
1979	N	10,125	0.1134	11,420	N	425	0.1063	476					L	3,684	0.2383	4,836
1980		676	c	6,572		403	c	3,200						5,638	c	41,777
1981	E	16,075	0.0443	16,820	E	17,702	0.0208	18,077	N	11,532	0.0004	11,537	E	56,270	0.0192	57,373
1982	E	5,325	0.5630	12,185	E	11,729	0.4706	22,156	N	35,581	0.1192	40,395	E	41,208	0.4822	79,580
1983	(N)	1,032	0.6551	2,992	(N)	375	0.6812	1,176	L	8,327	0.0218	8,513	(N)	3,248	0.6547	9,407
1984	N	4,928	0.0000	4,928	N	4,130	0.0000	4,130	E	25,304	0.0465	26,538	N	41,484	0.0000	41,484
1985	L	4,306	0.0297	4,438	L	4,344	0.0050	4,366	E	14,064	0.2406	18,520	L	15,834	0.0784	17,181
1986	L	2,968	0.3092	4,296	N	3,308	0.2084	4,179	E	14,717	0.3133	21,431	N	12,072	0.2217	15,511
1987		d		4,063		d		973e	N	19,805	0.2344	25,870		d		17,422
1988	E	7,665	0.3153	11,194	E	4,220	0.3147	6,158	N	11,722	0.0841	12,799	E	28,294	0.3244	41,881

a Coho migrations were not monitored prior to 1981.

b The timing model used for estimating missed counts depends on the distribution of mean date of migration from appendices C - F (E=early, N=normal, L=late). The use of parentheses () indicates assumed timing.

c From Baxter (1980); insufficient data to estimate escapements using time series techniques.

d Except for coho, escapements were estimated from a ratio of unknown 1987 escapement and known 1987 aerial assessment to known 1988 escapement and known 1988 aerial assessment. Coho escapements estimated using time series techniques.

e Aerial sockeye counts in riverine spawning habitat are subject to a wide range of error when surveys are not targeting the species.

Table 2. Daily salmon counts by sex with estimates for missing data, Kogruklu Weir, 1988.

Date	Chinook			Sockeye			Coho			Chum		
	Male	Female	Total ^a	Male	Female	Total ^a	Male	Female	Total ^a	Male	Female	Total ^a
15-Jun			0.0			0.0						1.4
16-Jun			0.0			0.0						0.3
17-Jun			0.0			0.0						2.7
18-Jun			0.7			0.0						3.5
19-Jun			1.6			0.0						2.2
20-Jun			3.1			0.0						14.3
21-Jun			6.6			1.5						23.1
22-Jun			13.3			1.9						30.2
23-Jun			28.1			6.5						68.8
24-Jun			51.7			17.0						93.2
25-Jun			106.4			25.9						95.5
26-Jun			66.5			31.0						158.6
27-Jun			212.8			43.9						300.2
28-Jun			222.1			75.6						866.0
29-Jun			354.4			183.9						1629.7
30-Jun			373.7			240.0						1623.2
01-Jul			410.2			331.6						1907.6
02-Jul			601.0			426.3						2530.9
03-Jul			584.4			320.1						2596.4
04-Jul			492.0			212.5						1516.7
05-Jul	234	115	349	38	37	75	0	0	0	1255	590	1845
06-Jul	368	97	465	94	56	150	0	0	0	1033	347	1380
07-Jul	471	225	696	136	147	283	0	0	0	1190	504	1694
08-Jul	386	197	583	208	268	476	0	0	0	1344	615	1959
09-Jul	377	194	571	172	333	505	0	0	0	1752	999	2751
10-Jul	436	248	684	175	244	419	0	0	0	1287	864	2151
11-Jul	463	241	704	206	301	507	0	0	0	1630	1008	2638
12-Jul	436	222	658	172	193	365	0	0	0	1572	1063	2635
13-Jul	339	153	492	140	99	239	0	0	0	1198	762	1960
14-Jul	411	184	595	153	120	273	0	0	0	1302	776	2078
15-Jul	285	165	450	139	137	276	0	0	0	1095	677	1772
16-Jul	203	108	311	98	81	179	0	0	0	601	396	997
17-Jul	80	70	150	50	59	109	0	0	0	432	295	727
18-Jul	45	58	103	44	39	83	0	0	0	237	173	410
19-Jul	79	45	124	22	24	46	0	0	0	282	177	459
20-Jul	23	24	47	23	14	37	1	0	1	226	109	335
21-Jul	49	58	107	26	14	40	0	0	0	213	131	344
22-Jul	51	57	108	18	11	29	0	0	0	127	103	230
23-Jul	53	31	84	15	18	33	0	0	0	123	70	193
24-Jul	26	30	56	15	13	28	0	1	1	124	104	228
25-Jul	31	15	46	6	3	9	0	0	0	52	43	95
26-Jul	16	22	38	5	4	9	0	0	0	74	50	124
27-Jul	11	16	27	4	0	4	0	0	0	60	43	103
28-Jul	9	7	16	4	6	10	0	0	0	71	48	119
29-Jul	10	17	27	3	3	6	0	0	0	62	35	97
30-Jul	18	13	31	9	0	9	0	0	0	98	49	147
31-Jul	12	11	23	8	4	12	0	0	0	82	52	134
01-Aug			0.0			0.0						61.0
02-Aug			0.0			0.0						61.0
03-Aug	2	2	4	0	1	1	0	0	0	21	50	71
04-Aug	9	3	12	0	3	3	0	0	0	28	44	72
05-Aug	6	0	6	1	2	3	0	0	0	19	42	61
06-Aug	7	0	7	2	0	2	2	2	4	20	42	62
07-Aug	5	1	6	1	0	1	4	2	6	21	34	55
08-Aug	8	2	10	0	0	0	5	6	11	22	31	53
09-Aug	3	0	3	1	0	1	8	7	15	18	27	45
10-Aug	1	0	1	3	0	3	16	9	25	22	25	47
11-Aug	5	0	5	1	0	1	17	21	38	10	25	35
12-Aug	10	0	10	0	1	1	40	40	80	21	16	37
13-Aug	2	0	2	1	0	1	52	34	86	7	11	18
14-Aug	3	0	3	1	0	1	39	7	46	9	7	16
15-Aug	2	0	2	0	0	0	18	7	25	3	4	7
16-Aug	3	0	3	0	0	0	68	37	105	6	7	13
17-Aug	5	0	5	0	0	0	111	46	157	7	13	20
18-Aug	4	0	4	2	0	2	157	101	258	5	15	20
19-Aug	3	0	3	1	0	1	123	79	202	3	12	15
20-Aug	3	0	3	0	0	0	175	115	290	6	6	12
21-Aug	3	0	3	1	0	1	194	158	352	5	7	12
22-Aug	3	0	3	1	0	1	232	151	383	3	2	5

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Table 2. (continued) page 2 of 2

Date	Chinook			Sockeye			Coho			Chum		
	Male	Female	Total ^a	Male	Female	Total ^a	Male	Female	Total ^a	Male	Female	Total ^a
23-Aug	2	0	2	0	0	0	194	129	323	2	7	9
24-Aug	0	0	0	0	0	0	230	159	389	1	0	1
25-Aug	1	0	1	0	0	0	161	97	258	0	0	0
26-Aug	1	0	1	0	0	0	520	378	898	0	0	0
27-Aug	1	0	1	1	0	1	205	173	378	1	0	1
28-Aug	4	0	4	0	0	0	346	272	618	0	0	0
29-Aug	1	0	1	0	0	0	311	242	553	1	0	1
30-Aug	1	0	1	0	0	0	407	363	770	0	0	0
31-Aug	1	0	1	0	0	0	284	210	494	0	0	0
01-Sep	1	0	1	1	0	1	172	158	330	0	0	0
02-Sep	1	0	1	1	0	1	190	179	369	0	0	0
03-Sep	0	0	0	1	0	1	119	119	238	0	1	1
04-Sep	1	0	1	0	0	0	131	106	237	0	0	0
05-Sep	1	0	1	0	0	0	79	92	171	0	0	0
06-Sep	1	0	1	1	0	1	96	74	170	0	0	0
07-Sep	0	0	0	0	0	0	95	58	153	0	0	0
08-Sep	3	0	3	0	0	0	280	165	445	0	0	0
09-Sep	0	0	0	0	0	0	111	68	179	0	0	0
10-Sep	0	0	0	0	0	0	240	194	434	0	0	0
11-Sep	0	0	0	0	0	0	445	521	966	0	0	0
12-Sep	0	0	0	0	0	0	162	274	436	0	0	0
13-Sep	3	0	3	1	0	1	88	169	257	0	0	0
14-Sep	2	0	2	0	0	0	47	105	152	0	0	0
15-Sep	0	0	0	0	0	0	42	70	112	0	0	0
16-Sep	0	0	0	0	0	0	45	76	121	0	0	0
17-Sep	0	0	0	0	0	0	84	102	186	0	0	0
18-Sep									202.7			
19-Sep									155.9			
20-Sep									152.5			
21-Sep									87.9			
22-Sep									131.1			
23-Sep									72.5			
24-Sep									70.4			
25-Sep									32.1			
26-Sep									34.6			
27-Sep									30.2			
28-Sep									20.1			
29-Sep									16.7			
30-Sep									10.0			
01-Oct									10.1			
02-Oct									13.7			
03-Oct									12.0			
04-Oct									10.1			
05-Oct									9.3			
06-Oct									4.9			
Total			11193.5			6157.7			12798.8			41880.6

a Counts which appear as real numbers with one decimal are estimates derived from historic data. Integers represent actual counts. Missing chinook, sockeye and chum counts were estimated from the early migration timing models, while missing coho counts were estimated from the average migration timing model presented in Appendix ??.

b The weir was pulled at 1200 hrs on 1 August and reinstalled fish-tight at 2100 hrs on 2 August.

Table 3. Revised historical escapement estimates and percent of objectives achieved, Kogrukluk River, 1976-88.

Escapement Objectives								

Chinook Sockeye Coho Chum								

10,000 2,000 25,000 30,000								

Revised Escapement Estimates					Percent of Objective			

Year	Chinook	Sockeye	Coho	Chum	Chinook	Sockeye	Coho	Chum

1976	5,818	2,366		8,417	58	118	a	28
1977	1,945	1,637		19,444	19	82	a	65
1978	13,601	1,699		49,010	136	85	a	163
1979	11,420	476		4,836	114	24	a	16
1980	6,572	3,200		41,777	66	160	a	139
1981	16,820	18,077	11,537	57,373	168	904	46	191
1982	12,185	22,156	40,395	79,580	122	1108	162	265
1983	2,992	1,176	8,513	9,407	30	59	34	31
1984	4,928	4,130	26,538	41,484	49	207	106	138
1985	4,438	4,366	18,520	17,181	44	218	74	57
1986	4,296	4,179	21,431	15,511	43	209	86	52
1987 b	4,063	973	25,870	17,422	41	49	103	58
1988	11,194	6,158	12,799	41,881	112	308	51	140

Average					77.1	271.5	82.8	103.4

a Coho were not counted prior to 1981.

b Chinook, sockeye and chum were estimated using 1987 aerial and 1988 aerial and weir data. This should be revised as more same-year aerial and weir data becomes available.

Table 4. Pink salmon counts and time series, Kogrukluk River, 1988.

Date	Male	Female	Total	Cum. Total	Daily Prop.	Cum. Prop.	t	Coded Prop.	Mean Date a	Var. Comp.	Std. Dev.
01-Jul							1	0.00	t= 22.0	0.0000	18.99
02-Jul							2	0.00		0.0000	
03-Jul							3	0.00		0.0000	
04-Jul							4	0.00		0.0000	
05-Jul	0	0	0	0	0.00000	0.00000	5	0.00		0.0000	
06-Jul	0	0	0	0	0.00000	0.00000	6	0.00		0.0000	
07-Jul	0	0	0	0	0.00000	0.00000	7	0.00		0.0000	
08-Jul	0	0	0	0	0.00000	0.00000	8	0.00		0.0000	
09-Jul	0	0	0	0	0.00000	0.00000	9	0.00		0.0000	
10-Jul	0	0	0	0	0.00000	0.00000	10	0.00		0.0000	
11-Jul	1	0	1	1	0.04167	0.04167	11	0.46		4.6303	
12-Jul	0	0	0	1	0.00000	0.04167	12	0.00		0.0000	
13-Jul	0	0	0	1	0.00000	0.04167	13	0.00		0.0000	
14-Jul	0	0	0	1	0.00000	0.04167	14	0.00		0.0000	
15-Jul	0	0	0	1	0.00000	0.04167	15	0.00		0.0000	
16-Jul	0	0	0	1	0.00000	0.04167	16	0.00		0.0000	
17-Jul	1	0	1	2	0.04167	0.08333	17	0.71		11.0591	
18-Jul	0	0	0	2	0.00000	0.08333	18	0.00		0.0000	
19-Jul	1	0	1	3	0.04167	0.12500	19	0.79		13.8143	
20-Jul	2	0	2	5	0.08333	0.20833	20	1.67		28.0093	
21-Jul	4	0	4	9	0.16667	0.37500	21	3.50		51.0417	
22-Jul	5	0	5	14	0.20833	0.58333	22	4.58		63.1959	
23-Jul	5	0	5	19	0.20833	0.79167	23	4.79		69.0715	
24-Jul	0	0	0	19	0.00000	0.79167	24	0.00		0.0000	
25-Jul	3	0	3	22	0.12500	0.91667	25	3.13		59.8145	
26-Jul	0	0	0	22	0.00000	0.91667	26	0.00		0.0000	
27-Jul	1	0	1	23	0.04167	0.95833	27	1.13		27.8965	
28-Jul	0	0	0	23	0.00000	0.95833	28	0.00		0.0000	
29-Jul	0	1	1	24	0.04167	1.00000	29	1.21		32.1824	
30-Jul	0	0	0	24	0.00000	1.00000	30	0.00		0.0000	
31-Jul	0	0	0	24	0.00000	1.00000	31	0.00		0.0000	
Total or Maximum	23	1	24	24	1.00000	1.00000		21.96		360.7154	

a The mean date is the date corresponding to t (mean t).

Table 5. Daily salmon carcass counts by sex, Kogrukluk Weir, 1988.

Date	Chinook		Sockeye		Coho		Chum	
	Male	Female	Male	Female	Male	Female	Male	Female
15-Jun								
16-Jun								
17-Jun								
18-Jun								
19-Jun								
20-Jun								
21-Jun								
22-Jun								
23-Jun								
24-Jun								
25-Jun								
26-Jun								
27-Jun								
28-Jun								
29-Jun								
30-Jun								
01-Jul								
02-Jul								
03-Jul								
04-Jul								
05-Jul	0	0	0	0	0	0	19	1
06-Jul	0	0	0	0	0	0	17	4
07-Jul	0	0	0	0	0	0	18	2
08-Jul	0	0	0	1	0	0	30	7
09-Jul	0	0	0	0	0	0	58	11
10-Jul	0	0	0	0	0	0	62	5
11-Jul	0	0	0	1	0	0	53	8
12-Jul	0	1	0	0	0	0	150	26
13-Jul	0	0	0	1	0	0	72	13
14-Jul	2	1	0	1	0	0	117	19
15-Jul	0	3	0	0	0	0	179	30
16-Jul	1	0	0	0	0	0	274	46
17-Jul	1	2	0	1	0	0	484	82
18-Jul	1	4	0	0	0	0	254	40
19-Jul	2	3	1	0	0	0	303	72
20-Jul	4	9	0	1	0	0	470	117
21-Jul	11	12	0	0	0	0	463	80
22-Jul	8	7	0	1	0	0	270	50
23-Jul	14	9	0	0	0	0	356	38
24-Jul	33	17	1	0	0	0	564	83
25-Jul	23	14	0	0	0	0	180	44
26-Jul	66	26	0	0	0	0	482	79
27-Jul	35	14	1	0	0	0	187	37
28-Jul	67	28	1	0	0	0	328	60
29-Jul	70	20	1	0	0	0	289	53
30-Jul	99	32	1	1	0	0	190	42
31-Jul a	87.3	28.0	1.3	0.8	0.0	0.0	149.0	36.0
01-Aug a	75.5	24.0	1.5	0.5	0.0	0.0	108.0	30.0
02-Aug a	63.8	20.0	1.8	0.3	0.0	0.0	67.0	24.0
03-Aug	52	16	2	0	0	0	26	18
04-Aug	67	26	6	0	0	0	48	20
05-Aug	90	26	15	0	0	0	88	12
06-Aug	71	19	10	0	0	0	44	19
07-Aug	66	14	18	4	0	0	30	6
08-Aug	57	21	14	0	0	0	36	8
09-Aug	46	10	21	0	0	0	28	7
10-Aug	56	12	20	1	0	0	28	6
11-Aug	28	6	11	1	0	0	15	4
12-Aug	34	5	28	3	0	0	12	6
13-Aug	18	3	15	1	0	0	5	3
14-Aug	18	5	20	0	0	0	14	8
15-Aug	11	3	10	1	0	0	4	4
16-Aug	10	3	16	2	0	0	9	17
17-Aug	7	1	9	2	0	0	8	10
18-Aug	8	4	11	1	0	0	13	11
19-Aug	12	5	11	1	0	0	10	3
20-Aug	8	1	8	1	0	1	6	8
21-Aug	5	1	8	1	0	0	6	5
22-Aug	0	0	2	4	0	0	2	2

-continued-

Table 5. (continued) page 2 of 2

Date	Chinook		Sockeye		Coho		Chum	
	Male	Female	Male	Female	Male	Female	Male	Female
23-Aug	3	0	3	2	0	0	1	6
24-Aug	0	0	1	2	0	0	2	2
25-Aug	0	0	3	3	0	0	4	5
26-Aug	1	1	2	1	0	0	2	4
27-Aug	0	0	3	1	0	0	2	2
28-Aug	0	0	0	0	0	0	0	2
29-Aug	1	0	1	0	0	0	0	0
30-Aug	1	0	1	2	0	0	0	3
31-Aug	0	0	0	0	0	0	0	0
01-Sep	0	0	1	0	0	0	1	2
02-Sep	0	0	0	0	0	0	0	0
03-Sep	0	0	0	0	0	0	0	0
04-Sep	0	0	0	0	0	0	0	1
05-Sep	0	0	0	0	0	0	0	0
06-Sep	0	0	1	0	0	0	0	1
07-Sep	0	0	0	0	0	0	0	0
08-Sep	0	0	0	0	0	0	0	0
09-Sep	1	0	0	0	0	0	1	1
10-Sep	0	0	0	0	0	0	0	0
11-Sep	0	0	0	0	0	1	0	0
12-Sep	0	0	0	0	0	0	0	0
13-Sep	0	0	0	0	0	0	0	0
14-Sep	1	0	0	0	0	3	0	0
15-Sep	0	0	0	0	0	0	0	0
16-Sep	0	0	0	0	0	0	0	0
17-Sep	0	1	0	0	1	2	0	0
18-Sep								
19-Sep								
20-Sep								
21-Sep								
22-Sep								
23-Sep								
24-Sep								
25-Sep								
26-Sep								
27-Sep								
28-Sep								
29-Sep								
30-Sep								
01-Oct								
02-Oct								
03-Oct								
04-Oct								
05-Oct								
06-Oct								
	1335.5	457.0	281.5	43.5	1.0	7.0	6638.0	1345.0

a Data for 31 July to 2 August was estimated using linear methods.

Table 6. Length at age summary for chinook salmon, Kogruklu River, 1988.

	Age Class			
	1.2	1.3	1.4	1.5
<u>Females</u>				
Mean Length	.0	818.4	867.5	905.1
Std. Error	.00	4.83	3.86	5.47
Range	0- 0	640- 900	695-1002	740-1000
Sample Size	0	76	181	67
<u>Males</u>				
Mean Length	561.1	724.8	828.4	880.6
Std. Error	6.23	3.18	7.46	25.15
Range	405- 675	520- 935	615- 995	800-1005
Sample Size	78	369	89	8
<u>All Fish</u>				
Mean Length	561.1	740.8	854.6	902.5
Std. Error	6.23	3.23	3.73	5.57
Range	405- 675	520- 935	615-1002	740-1005
Sample Size	78	445	270	75

Table 7. Length at age summary for sockeye salmon, Kogrukluk River, 1988.

	Age Class			
	1.2	1.3	1.4	2.3
<u>Females</u>				
Mean Length	.0	540.9	555.8	527.5
Std. Error	.00	1.65	4.73	12.50
Range	0- 0	495- 615	540- 570	515- 540
Sample Size	0	147	6	2
<u>Males</u>				
Mean Length	582.5	588.6	570.0	590.0
Std. Error	6.55	1.77	.00	20.00
Range	555- 595	530- 660	570- 570	570- 610
Sample Size	6	164	1	2
<u>All Fish</u>				
Mean Length	582.5	566.0	557.9	558.8
Std. Error	6.55	1.82	4.48	20.45
Range	555- 595	495- 660	540- 570	515- 610
Sample Size	6	311	7	4

Table 8. Length at age summary for coho salmon, Kogrukluuk River, 1988.

	Age Class		
	1.1	2.1	3.1
<u>Females</u>			
Mean Length	563.1	567.9	597.5
Std. Error	7.19	1.44	5.20
Range	540- 595	495- 630	585- 610
Sample Size	8	260	4
<u>Males</u>			
Mean Length	563.4	568.6	581.7
Std. Error	8.79	2.04	7.26
Range	475- 615	410- 640	570- 595
Sample Size	22	290	3
<u>All Fish</u>			
Mean Length	563.3	568.3	590.7
Std. Error	6.66	1.27	5.05
Range	475- 615	410- 640	570- 610
Sample Size	30	552	7

Table 9. Length at age summary for chum salmon, Kogrukluk River, 1988.

	Age Class		
	0.3	0.4	0.5
Females			
Mean Length	546.8	562.5	580.0
Std. Error	1.80	3.41	.00
Range	495- 620	505- 615	580- 580
Sample Size	163	57	1
Males			
Mean Length	579.9	591.1	597.7
Std. Error	1.48	2.55	6.62
Range	510- 655	510- 670	550- 620
Sample Size	267	122	11
All Fish			
Mean Length	567.4	582.0	596.3
Std. Error	1.38	2.28	6.22
Range	495- 655	505- 670	550- 620
Sample Size	430	179	12

Table 10. Chinook salmon spawner escapements (1988 revised) apportioned by age class and sex, Kogrukluk River, 1976 - 1988.

Year		Age Class					Total	Female
		1.1	1.2	1.3	1.4	1.5		
1976	Percent	0.3	7.2	39.5	52.7	0.3	100.0	45.1
	Number	17	419	2298	3066	17	5818	2624
1977	Percent	0.0	3.6	21.8	72.9	1.7	100.0	60.2
	Number	0	70	424	1418	33	1945	1171
1978	Percent	0.0	16.9	10.2	72.9	0.0	100.0	47.7
	Number	0	2299	1387	9915	0	13601	6488
1979	Percent	0.0	63.1	15.5	21.4	0.0	100.0	17.8
	Number	0	7206	1770	2444	0	11420	2033
1980	Percent	0.0	30.2	47.6	14.3	7.9	100.0	15.9
	Number	0	1985	3128	940	519	6572	1045
1981	Percent	0.0	6.5	33.6	58.7	1.2	100.0	47.0
	Number	0	1093	5652	9873	202	16820	7905
1982	Percent	0.3	15.1	21.2	57.8	5.6	100.0	49.2
	Number	37	1840	2583	7043	682	12185	5995
1983	Percent	0.2	20.3	23.9	51.2	4.4	100.0	28.9
	Number	6	607	715	1532	132	2992	865
1984	Percent	0.3	21.1	46.9	27.8	3.9	100.0	22.7
	Number	15	1040	2311	1370	192	4928	1119
1985	Percent	0.0	17.1	34.7	45.2	3.0	100.0	32.2
	Number	0	759	1540	2006	133	4438	1429
1986	Percent	0.1	8.7	58.3	27.1	5.7	100.0	23.0
	Number	6	373	2505	1164	247	4296	987
1987	Percent	0.0	25.6	24.8	48.7	0.9	100.0	3.4
	Number	0	1040	1008	1979	37	4063	c
1988	Percent	0.0	9.0	51.3	31.1	8.6	100.0	34.4
	Number	0	1006	5739	3482	967	11194	3848

a The age composition was calculated using 117 samples taken from the weir trap during a two day period of operation, July 15-16. Commercial catch statistics indicate a weak return of females, but it is doubtful that the actual return of Kogrukluk River female chinook salmon was as poor as is indicated here.

b Lengthy periods of high water rendered weir operation impossible during much of the chinook salmon migration. Escapement was estimated in 1988 using a combination of the 1988 weir count and 1987 and 1988 aerial survey counts.

c Sex composition data was unacceptable.

Table 11. Sockeye salmon spawner escapements (1988 revised) apportioned by age class and sex, Kogrukluk River, 1976-1988.

Year		Age Class						Total	Female	
		0.3a	1.2	0.4a	1.3	0.5a	1.4			Other
1976	Percent	0.0	0.0	0.0	99.4	0.0	0.6	0.0	100.0	14.0
	Number	0	0	0	2352	0	14	0	2366	331
1977	Percent	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	19.0
	Number	0	0	0	1637	0	0	0	1637	311
1978	Percent	0.0	2.4	0.0	90.8	0.0	6.8	0.0	100.0	57.0
	Number	0	41	0	1543	0	116	0	1699	968
1979	Percent	0.0	0.0	0.0	98.8	0.0	1.2	0.0	100.0	50.0
	Number	0	0	0	470	0	6	0	476	238
1980	Percent	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	44.8
	Number	0	0	0	3200	0	0	0	3200	1434
1981	Percent	0.0	22.9	0.0	77.1	0.0	0.0	0.0	100.0	50.7
	Number	0	4140	0	13937	0	0	0	18077	9165
1982	Percent	0.0	0.5	0.0	87.4	0.0	11.7	0.5	100.0	37.4
	Number	0	100	0	19362	0	2594	100	22156	8284
1983	Percent	0.0	23.6	0.0	71.9	0.0	4.5	0.0	100.0	60.7
	Number	0	278	0	846	0	53	0	1176	714
1984	Percent	0.0	1.2	0.0	94.0	0.1	2.4	2.3	100.0	41.9
	Number	0	50	0	3882	4	99	95	4130	1730
1985	Percent	5.9	1.7	0.2	88.8	2.9	0.5	0.0	100.0	49.2
	Number	258	74	9	3877	127	22	0	4366	2148
1986	Percent	1.6	0.3	0.0	95.6	0.0	2.5	0.0	100.0	51.3
	Number	67	13	0	3995	0	104	0	4179	2144
1987	Percent	2.3	0.0	0.0	97.7	0.0	0.0	0.0	100.0	60.5
	Number	22	0	0	951	0	0	0	973	589
1988	Percent	0.0	1.8	0.0	94.8	0.0	2.1	1.2	100.0	52.7
	Number	0	113	0	5839	0	131	75	6158	3248

a Prior to 1984, freshwater life was not carefully examined and was assumed to be two years.

b The age composition was calculated using 43 samples taken from the weir trap during four days of operation, July 15-16 and August 10-11.

c Lengthy periods of high water rendered weir operation impossible during much of the sockeye salmon migration. The data was insufficient for estimating escapements; however, 1987 aerial and 1988 aerial and 1988 weir data provided a total sockeye escapement estimate. This estimate should be changed as more data becomes available.

Table 12. Chum salmon spawner escapements (1988 revised) apportioned by age class and sex, Kogrukluk River, 1976-1988.

Year		Age Class					Total	Female
		0.2	0.3	0.4	0.5	Other		
1976	Percent	0.5	37.0	62.5	0.0	0.0	100.0	18.5
	Number	42	3114	5261	0	0	8417	1557
1977	Percent	0.0	62.8	29.9	7.3	0.0	100.0	26.3
	Number	0	12211	5814	1419	0	19444	5114
1978	Percent	1.6	45.4	53.0	0.0	0.0	100.0	44.5
	Number	784	22251	25975	0	0	49010	21809
1979	Percent	5.7	82.5	11.8	0.0	0.0	100.0	32.0
	Number	276	3990	571	0	0	4836	1548
1980	Percent	0.0	89.2	10.8	0.0	0.0	100.0	9.6
	Number	0	37265	4512	0	0	41777	4011
1981	Percent	0.0	13.6	86.4	0.0	0.0	100.0	36.9
	Number	0	7803	49570	0	0	57373	21171
1982	Percent	0.0	70.9	28.7	0.4	0.0	100.0	43.0
	Number	0	56422	22839	318	0	79580	34219
1983	Percent	0.4	22.1	75.8	1.7	0.0	100.0	41.3
	Number	38	2079	7131	160	0	9407	3885
1984	Percent	0.0	77.7	19.5	2.8	0.0	100.0	32.6
	Number	0	32233	8089	1162	0	41484	13524
1985	Percent	0.2	30.3	69.0	0.5	0.0	100.0	45.3
	Number	34	5206	11855	86	0	17181	7783
1986	Percent	0.4	69.6	27.5	2.5	0.0	100.0	36.8
	Number	62	10796	4266	388	0	15511	5708
1987	Percent	0.0	22.5	69.4	8.1	0.0	100.0	45.0
	Number	0	3920	12091	1411	0	17422	7840
1988	Percent	0.0	69.2	28.8	1.9	0.0	100.0	35.6
	Number	0	29000	12072	809	0	41881	14905

a The age composition was calculated using 160 samples taken from the weir trap during seven days of operation, July 15-16 and August 10-14.

b Lengthy periods of high water rendered weir operation impossible for much of the chum salmon migration. The data was insufficient for estimating escapements; however, 1987 aerial, 1988 aerial, and 1988 weir data was used to estimate total escapement. New estimates should be calculated as new data becomes available.

Table 13. Daily counts of gill net marked salmon by sex, Kogrukluk Weir, 1988.

Date	Chinook		Sockeye		Coho		Chum	
	Male	Female	Male	Female	Male	Female	Male	Female
15-Jun								
16-Jun								
17-Jun								
18-Jun								
19-Jun								
20-Jun								
21-Jun								
22-Jun								
23-Jun								
24-Jun								
25-Jun								
26-Jun								
27-Jun								
28-Jun								
29-Jun								
30-Jun								
01-Jul								
02-Jul								
03-Jul								
04-Jul								
05-Jul	11	6	3	2	0	0	119	76
06-Jul	17	10	1	2	0	0	79	14
07-Jul	38	28	0	2	0	0	86	39
08-Jul	28	36	2	13	0	0	82	25
09-Jul	34	18	1	5	0	0	105	56
10-Jul	20	37	3	4	0	0	74	35
11-Jul	37	33	3	4	0	0	98	52
12-Jul	26	41	1	2	0	0	73	47
13-Jul	16	5	5	1	0	0	62	27
14-Jul	15	25	0	0	0	0	54	21
15-Jul	23	25	1	1	0	0	52	34
16-Jul	16	14	5	3	0	0	37	23
17-Jul	10	12	0	5	0	0	38	23
18-Jul	3	8	0	0	0	0	21	21
19-Jul	9	1	2	0	0	0	18	27
20-Jul	2	4	0	1	0	0	20	12
21-Jul	2	8	0	0	0	0	7	14
22-Jul	2	11	1	1	0	0	8	11
23-Jul	4	5	1	1	0	0	9	4
24-Jul	1	1	1	1	0	0	8	4
25-Jul	6	7	0	0	0	0	7	5
26-Jul	2	4	0	0	0	0	9	1
27-Jul	1	2	0	0	0	0	6	6
28-Jul	0	0	0	0	0	0	5	3
29-Jul	4	2	0	0	0	0	3	4
30-Jul	3	1	1	0	0	0	3	5
31-Jul	2	3	0	0	0	0	7	7
01-Aug a	1.3	2.0	0.0	0.0	0.0	0.0	5.7	5.7
02-Aug a	0.7	1.0	0.0	0.0	0.0	0.0	4.3	4.3
03-Aug	0	0	0	0	0	0	3	3
04-Aug	0	0	0	0	0	0	2	2
05-Aug	1	0	0	0	0	0	0	9
06-Aug	0	0	0	0	0	0	3	0
07-Aug	1	0	0	0	0	0	2	4
08-Aug	0	1	0	0	0	0	1	3
09-Aug	1	0	0	0	1	0	1	1
10-Aug	0	0	0	0	0	1	2	0
11-Aug	1	0	0	0	0	0	0	3
12-Aug	2	0	0	0	1	2	3	3
13-Aug	1	0	0	0	0	0	0	2
14-Aug	0	0	1	0	0	0	1	0
15-Aug	0	0	0	0	0	0	0	1
16-Aug	0	0	0	0	1	0	0	0
17-Aug	0	0	0	0	0	2	0	0
18-Aug	0	0	0	0	0	0	0	0
19-Aug	0	0	0	0	0	1	0	0
20-Aug	0	0	0	0	0	2	0	0
21-Aug	0	0	0	0	1	3	0	0
22-Aug	0	0	0	0	4	0	0	0

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Table 13. (continued) page 2 of 2

Date	Chinook		Sockeye		Coho		Chum	
	Male	Female	Male	Female	Male	Female	Male	Female
23-Aug	0	0	0	0	2	3	0	0
24-Aug	0	0	0	0	2	3	0	0
25-Aug	0	0	0	0	1	6	0	0
26-Aug	0	0	0	0	2	5	0	0
27-Aug	0	0	0	0	4	3	0	0
28-Aug	0	0	0	0	3	7	0	0
29-Aug	0	0	0	0	5	3	0	0
30-Aug	0	0	0	0	13	9	0	0
31-Aug	0	0	0	0	10	6	0	0
01-Sep	1	0	0	0	7	10	0	0
02-Sep	1	0	0	0	8	5	0	0
03-Sep	0	0	0	0	11	4	0	0
04-Sep	0	0	0	0	6	11	0	0
05-Sep	1	0	0	0	4	8	0	0
06-Sep	0	0	0	0	9	8	0	0
07-Sep	0	0	0	0	6	1	0	0
08-Sep	0	0	0	0	16	20	0	0
09-Sep	0	0	0	0	4	2	0	0
10-Sep	0	0	0	0	7	15	0	0
11-Sep	0	0	0	0	18	9	0	0
12-Sep	0	0	0	0	9	5	0	0
13-Sep	0	0	0	0	6	9	0	0
14-Sep	0	0	0	0	5	7	0	0
15-Sep	0	0	0	0	6	3	0	0
16-Sep	0	0	0	0	6	3	0	0
17-Sep	0	0	0	0	2	2	0	0
18-Sep								
19-Sep								
20-Sep								
21-Sep								
22-Sep								
23-Sep								
24-Sep								
25-Sep								
26-Sep								
27-Sep								
28-Sep								
29-Sep								
30-Sep								
01-Oct								
02-Oct								
03-Oct								
04-Oct								
05-Oct								
06-Oct								
	344	351	32	48	180	178	1118	637

a Data for 1 - 2 August was estimated using linear methods.

Table 14. Meteorologic and hydrologic factors, Kogrukluk Weir, 1988.

Date	Precipitation (mm)	Cloud Cover (%)	Wind Direction/ Vel. (mph)	Temperature (degrees F)		Water Level (mm)
				Air	Water	
21-Jun						
22-Jun						
23-Jun						
24-Jun	0	75	S/5	59	8	3300
25-Jun	0	35	0	66	9.5	3200
26-Jun	7.5	75	V<5	68	10	3140
27-Jun	0.0	75	S/5	64	10	3170
28-Jun	2.2	100	S/10	52	10	3170
29-Jun	0.0	5	N/10	68	10	3120
30-Jun	6.8	35	N/5-20	73	11	3050
01-Jul	0.0	-	N/10	84	12	3180
02-Jul	0.0	5	S/10	65	11.5	3210
03-Jul	0.0	100	S/5	62	11	3110
04-Jul	0.0	5	S/5-10	64	11	3040
05-Jul	0.6	100	S/5	58	11	2950
06-Jul	T	100	S/5	54	10	2910
07-Jul	0.0	55	S/5	56	10	2860
08-Jul	0.0	5	S/5	65	10.5	2810
09-Jul	0.8	35	N/5-10	73	12	2760
10-Jul	9.5	100	0	59	12	2740
11-Jul	6.4	85	N/5-10	75	13	2810
12-Jul	11.6	75	N/5-10	67	12	2880
13-Jul	1.2	100	N/10-25	72	13	2820
14-Jul	0.5	55	S/5-10	66	13	2820
15-Jul	0.0	5	N/5	82	14	2790
16-Jul	0.0	5	V<5	82	14	2710
17-Jul	0.0	5	S/5-10	70	14	2670
18-Jul	0.0	35	S/10	64	14	2630
19-Jul	0.0	35	V<5	76	14	2600
20-Jul	7.0	-	V<5	77	14	2600
21-Jul	0.5	35	V<5	72	14	2660
22-Jul	0.0	35	S/5-10	68	14	2640
23-Jul	1.5	75	V<5	72	15	2580
24-Jul	0.0	55	V<5	70	14	2570
25-Jul	0.3	85	S/10-15	59	13	2560
26-Jul	T	85	S/5-10	56	12	2540
27-Jul	T	85	S/5-10	64	13	2510
28-Jul	2.9	55	N/5-10	64	13	2510
29-Jul	0.8	75	V<5	64	13	2490
30-Jul	0.4	75	S/10	69	13.5	2500
31-Jul	0.0	55	S/10-20	70	14	2495
01-Aug	6.0	85	S/10-15	56	12	2470
02-Aug	6.2	85	S/5	59	12	2570
03-Aug	0.0	5	0	67	13	2540
04-Aug	1.7	100	S/10	64	13	2495
05-Aug	10.2	100	S/5-10	53	11	2495
06-Aug	4.2	100	S<5	53	10	2450
07-Aug	0.0	100	N/10	64	12	2540
08-Aug	0.0	75	N/10-15	58	11	2500
09-Aug	0.0	55	V<5	59	11	2470
10-Aug	10.2	100	S/10-20	56	11	2455
11-Aug	0.0	100	S/5-10	57	11	2500
12-Aug	0.0	20	V<5	64	12	2490
13-Aug	0.0	20	S/5-10	64	12	2455
14-Aug	0.0	100	S/5-10	59	12	2430
15-Aug	1.0	100	S/5-10	55	10	2420
16-Aug	0.4	100	S/10-35	59	11	2410
17-Aug	2.5	100	V<5	58	11	2470
18-Aug	2.0	100	S/5-10	61	11	2590
19-Aug	6.5	100	S/10	55	11	2650
20-Aug	10.0	100	S/10	57	11	2650
21-Aug	0.0	100	N/5	59	10	2750
22-Aug	0.0	100	N/5	60	10	2670
23-Aug	0.0	100	V<5	51	10	2600
24-Aug	0.0	100	S/10-20	53	10	2570
25-Aug	7.8	100	NW/5-10	47	9	2560
26-Aug	6.0	100	S/10	55	9	2680

-continued-

Table 14. (continued) page 2 of 2

Date	Precipitation (mm)	Cloud Cover (%)	Wind Direction/ Vel. (mph)	Temperature (degrees F)		Water Level (mm)
				AIR	WATER	
27-Aug	2.0	100	V<5	54	9	2750
28-Aug	4.0	100	S/5	54	9	2670
29-Aug	7.7	100	S/5-10	54	9	2670
30-Aug	2.6	100	S/5	51	10	2720
31-Aug	0.4	35	N/5-10	55	10	2670
01-Sep	12.6	100	S/5	51	9	2630
02-Sep	2.2	100	V<5	54	9	2630
03-Sep	0.0	5	N/5-10	64	9	2620
04-Sep	1.5	35	S/5	57	9	2590
05-Sep	0.0	20	S/5-10	57	9	2570
06-Sep	2.2	100	S/5-10	52	8	2565
07-Sep	2.0	85	V<5	54	8	2565
08-Sep	0.0	85	N<5	52	8	2565
09-Sep	3.6	55	N/10-15	48	8	2550
10-Sep	14.5	100	N/5	54	8	2570
11-Sep	T	85	N/5	63	8	2850
12-Sep	1.5	75	N/10-15	56	8	2790
13-Sep	0.0	35	N/5-10	55	8	2690
14-Sep	0.4	100	S/5-10	46	8	2640
15-Sep	T	100	S/10-20	50	7	2600
16-Sep	T	100	S/10-20	52	8	2620
17-Sep	3.2	100	S/10-50	54	8	2790
18-Sep	12.5	100	S/20-60	54	8	2980
19-Sep	8.5	100	S/10-20	50	8	2940
20-Sep	2.0	100	S/5-10	50	8	3200
21-Sep	0.0	100	S/5-10	48	7	3170
22-Sep	T	85	N/5	48	7	3100
23-Sep	0.0	85	N/5-10	46	6	3050
24-Sep						
25-Sep						
26-Sep						
27-Sep						
28-Sep						
29-Sep						
30-Sep						
01-Oct						
02-Oct						
03-Oct						
04-Oct						
05-Oct						

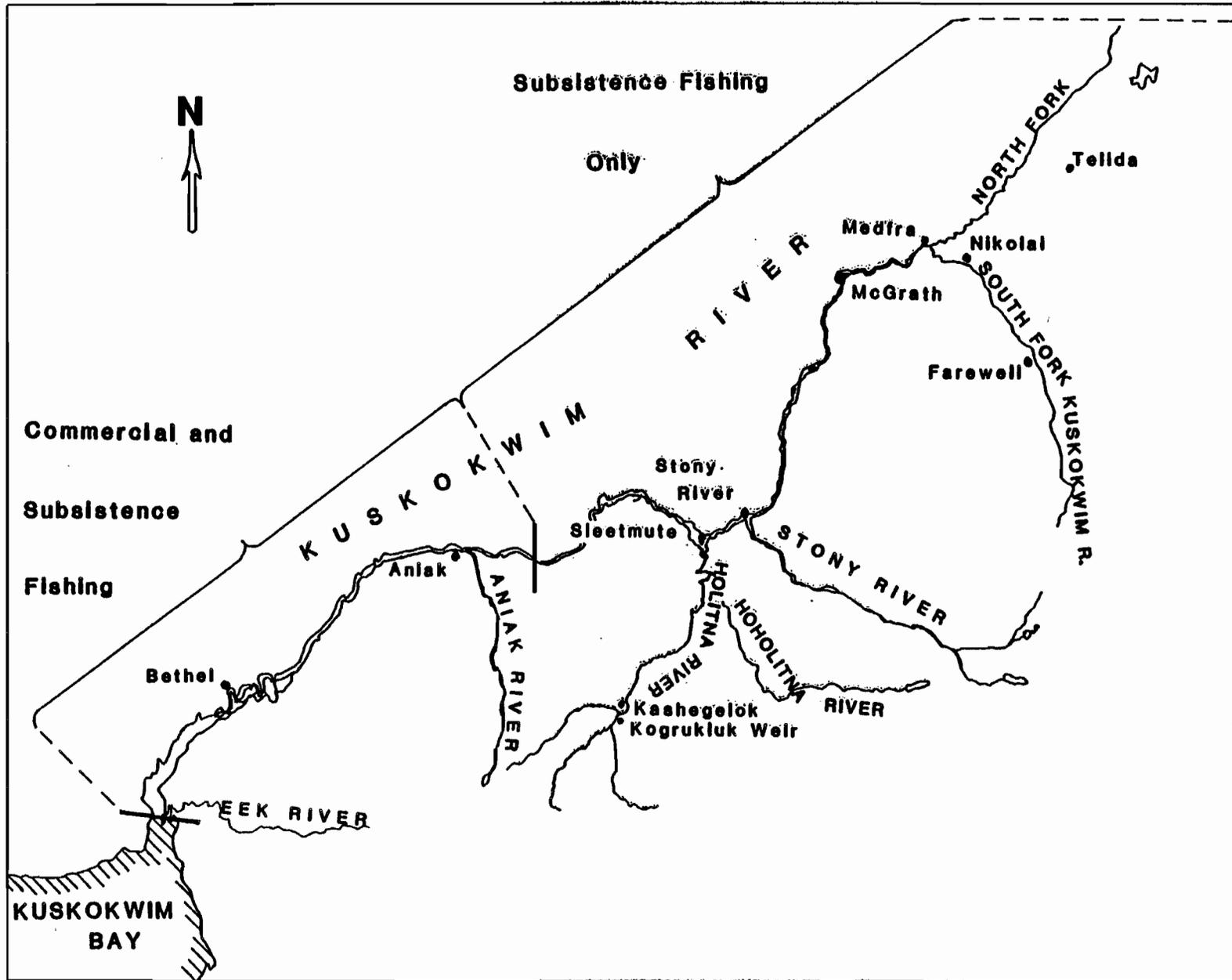


Figure 1. Kuskokwim area map.

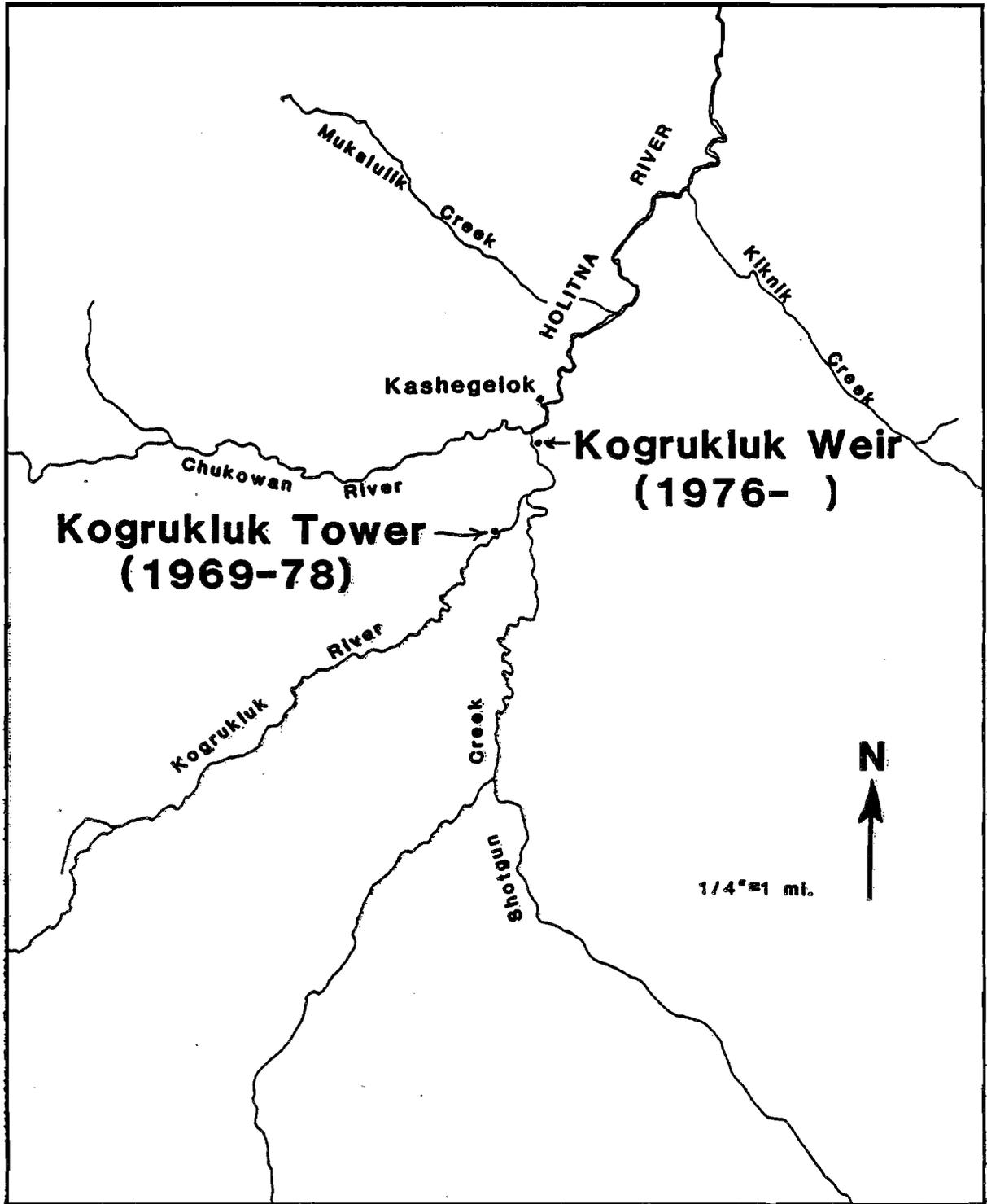


Figure 2. Upper Holitna River in the vicinity of the Kogrukluk Weir project.

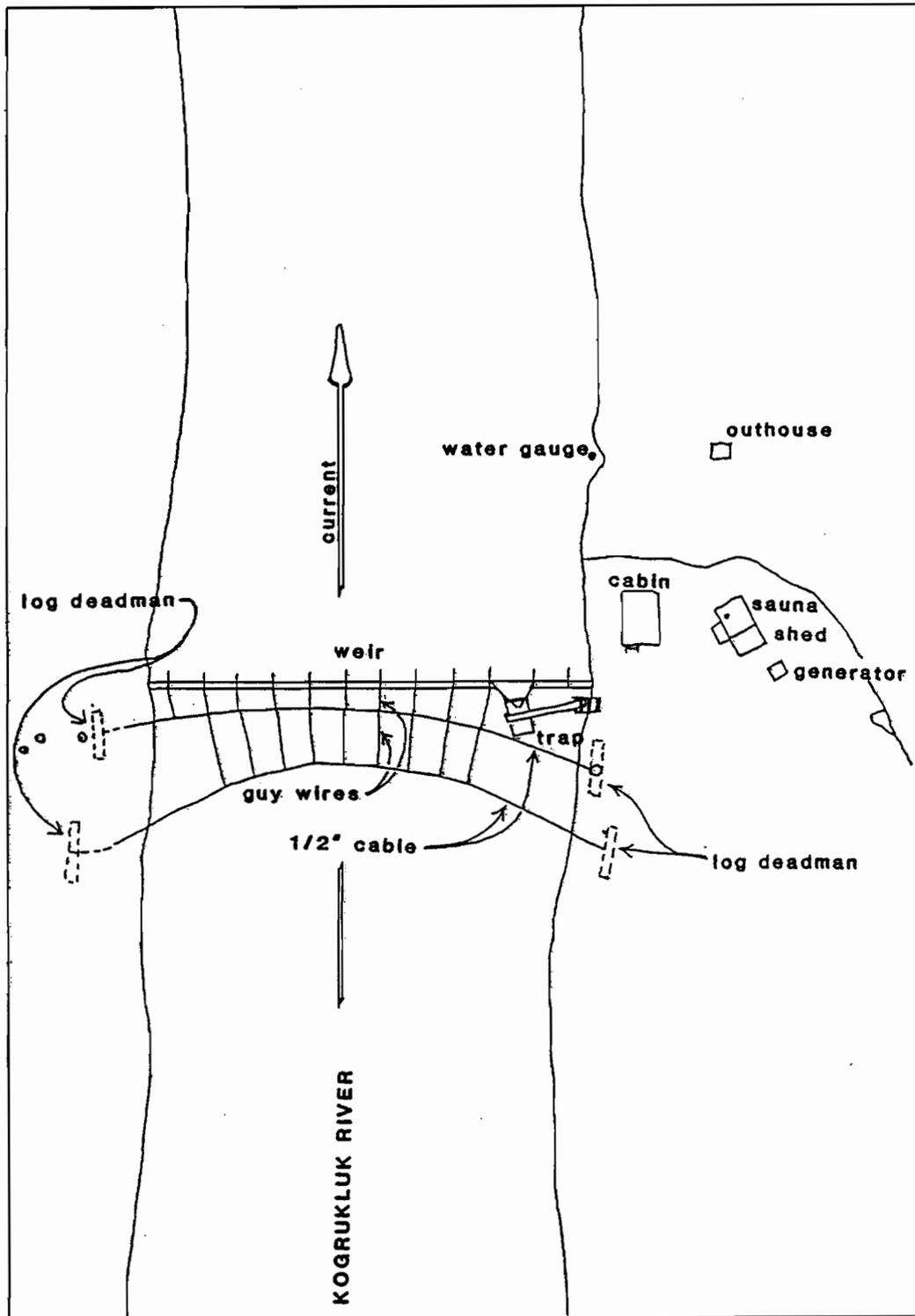


Figure 3. Kogruklu Weir project.

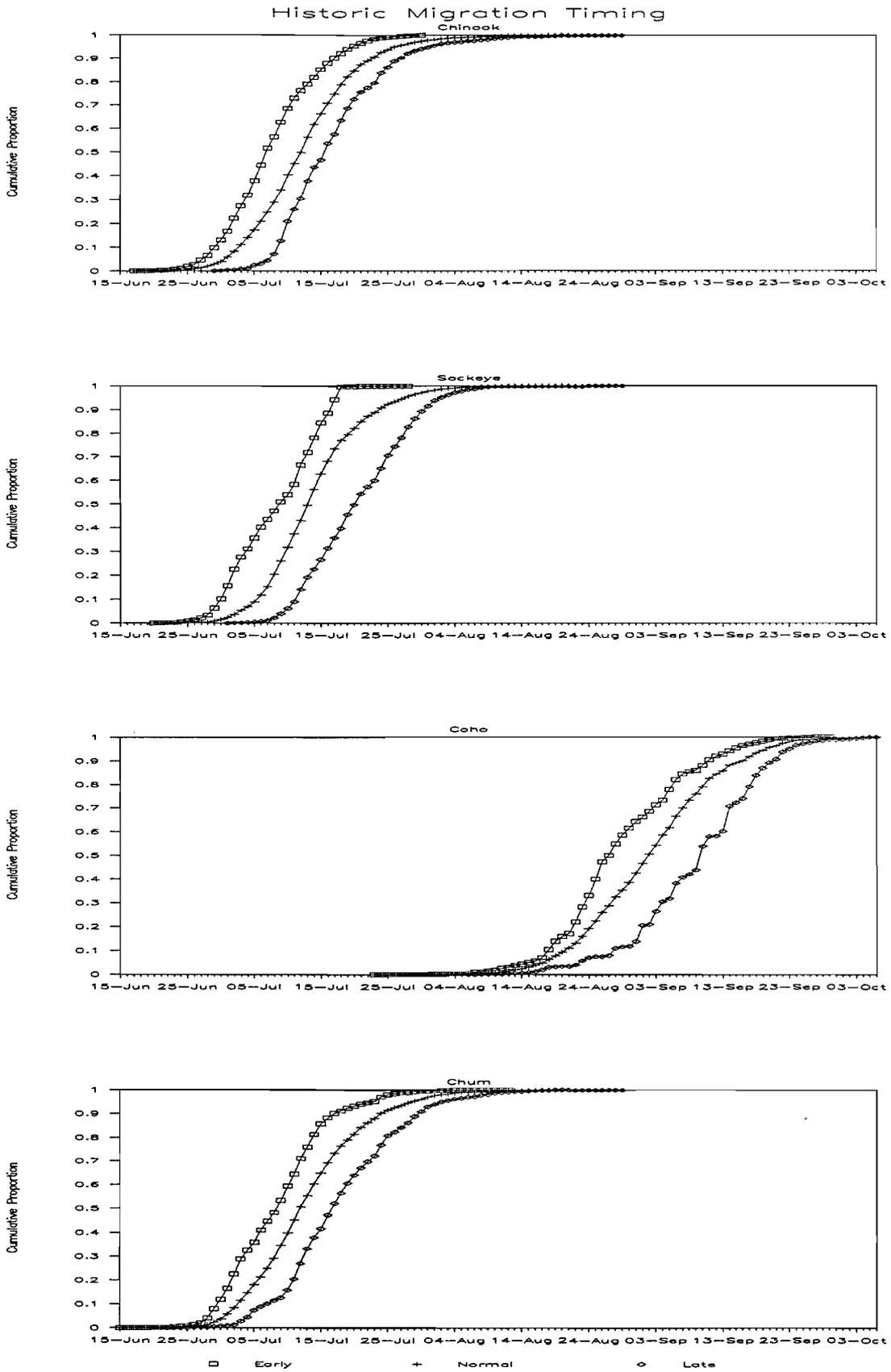


Figure 4. Estimated early, normal and late weir migration timing, Kogrukluk River, 1976-1988.

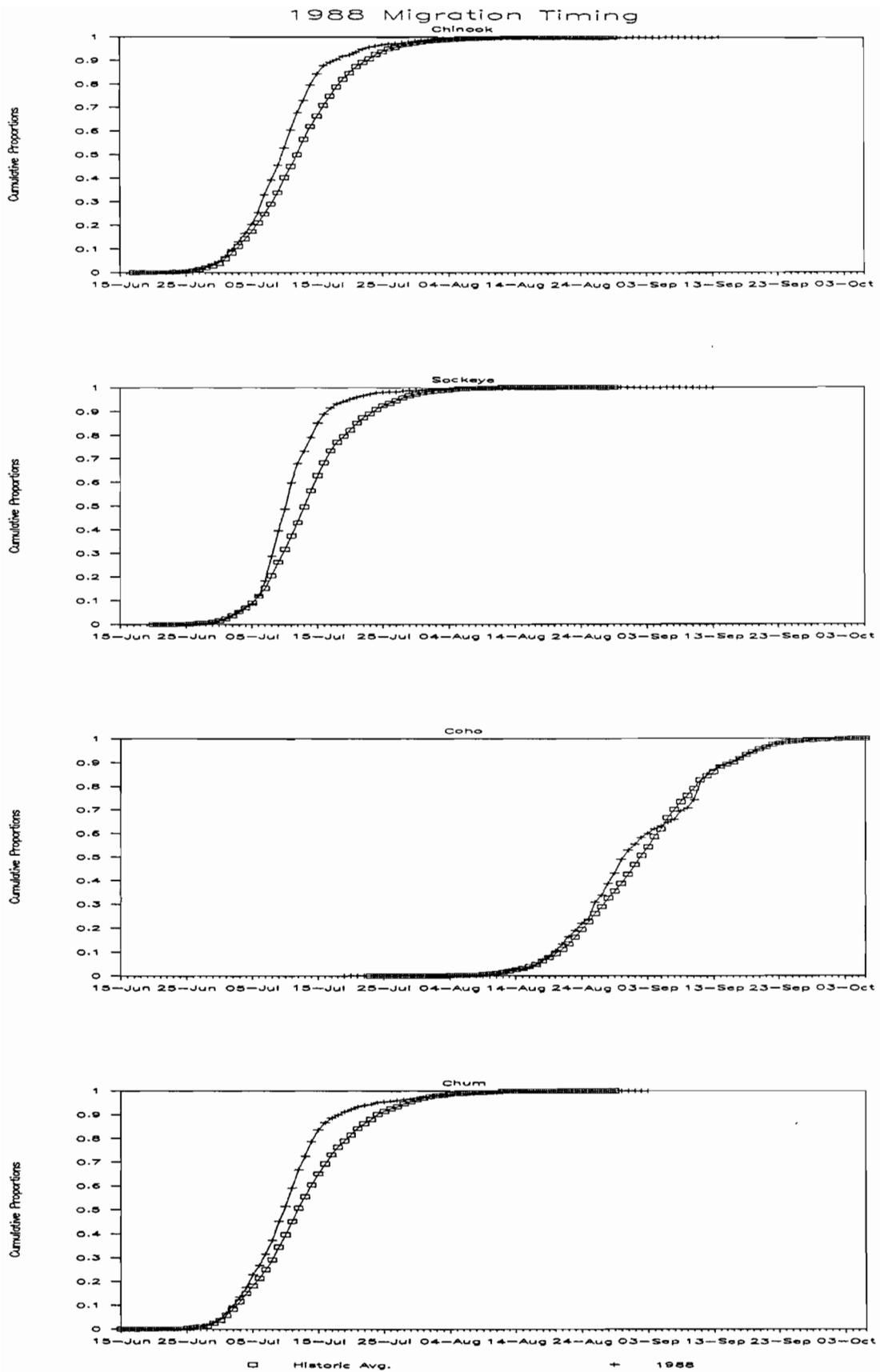


Figure 5. Estimated weir migration timing in 1988 and the average timing from 1976-1988, Kogrukluk River.

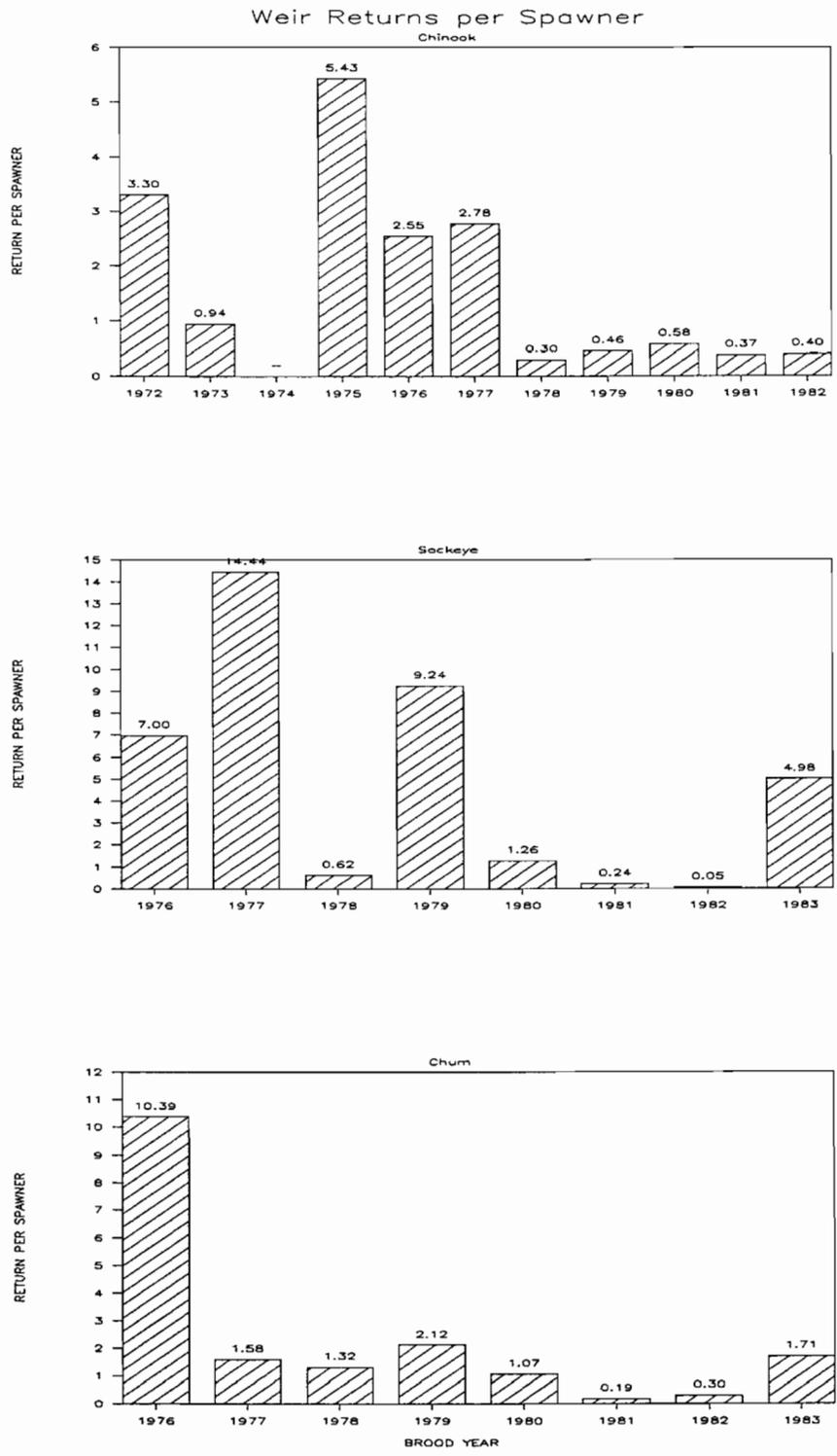


Figure 6. Estimated weir returns per spawner, Kogruk-luk River, 1972-1983.

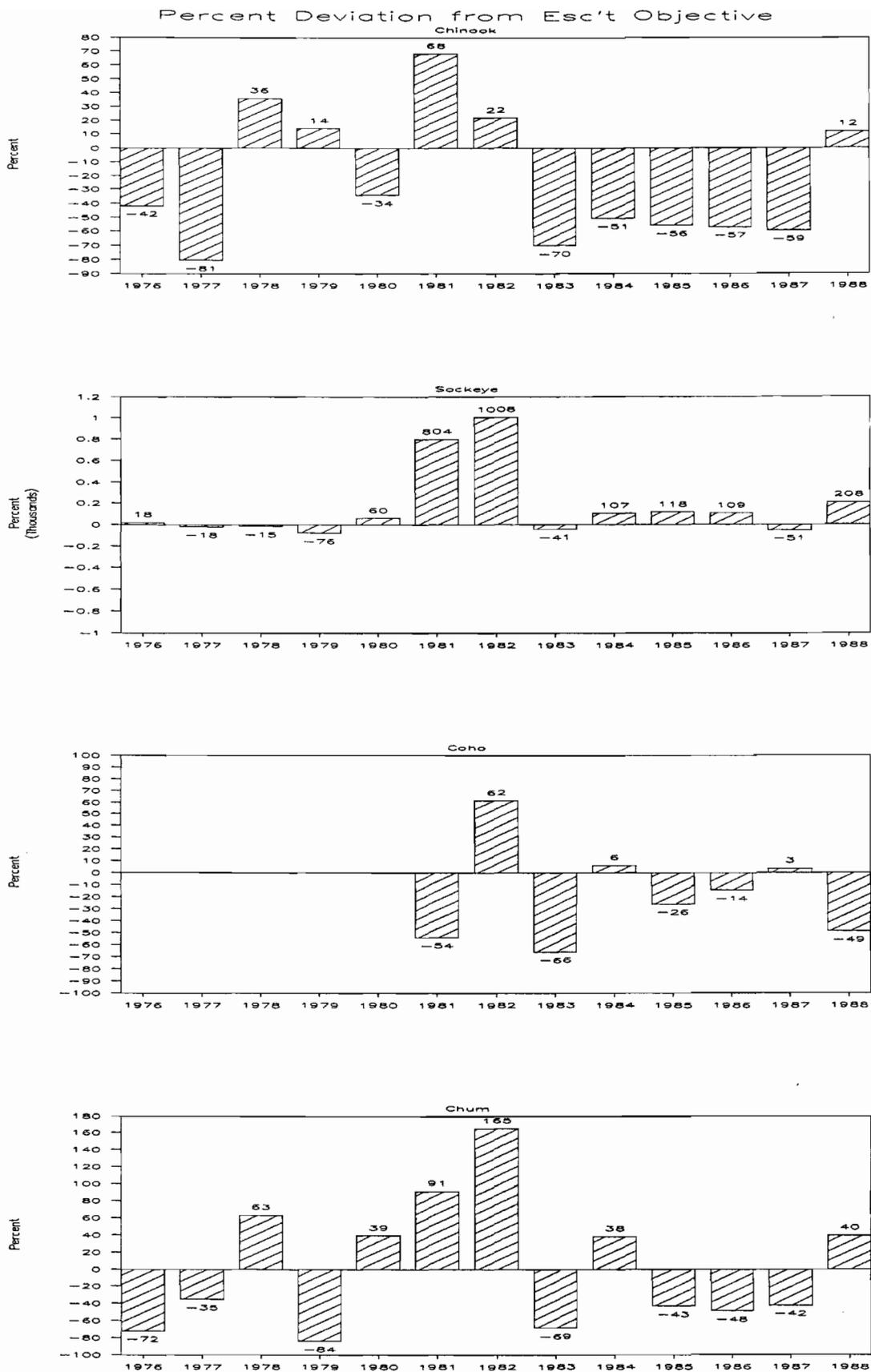


Figure 7. Percent deviation from weir escapement objectives, Kogruklu River, 1976-1988.

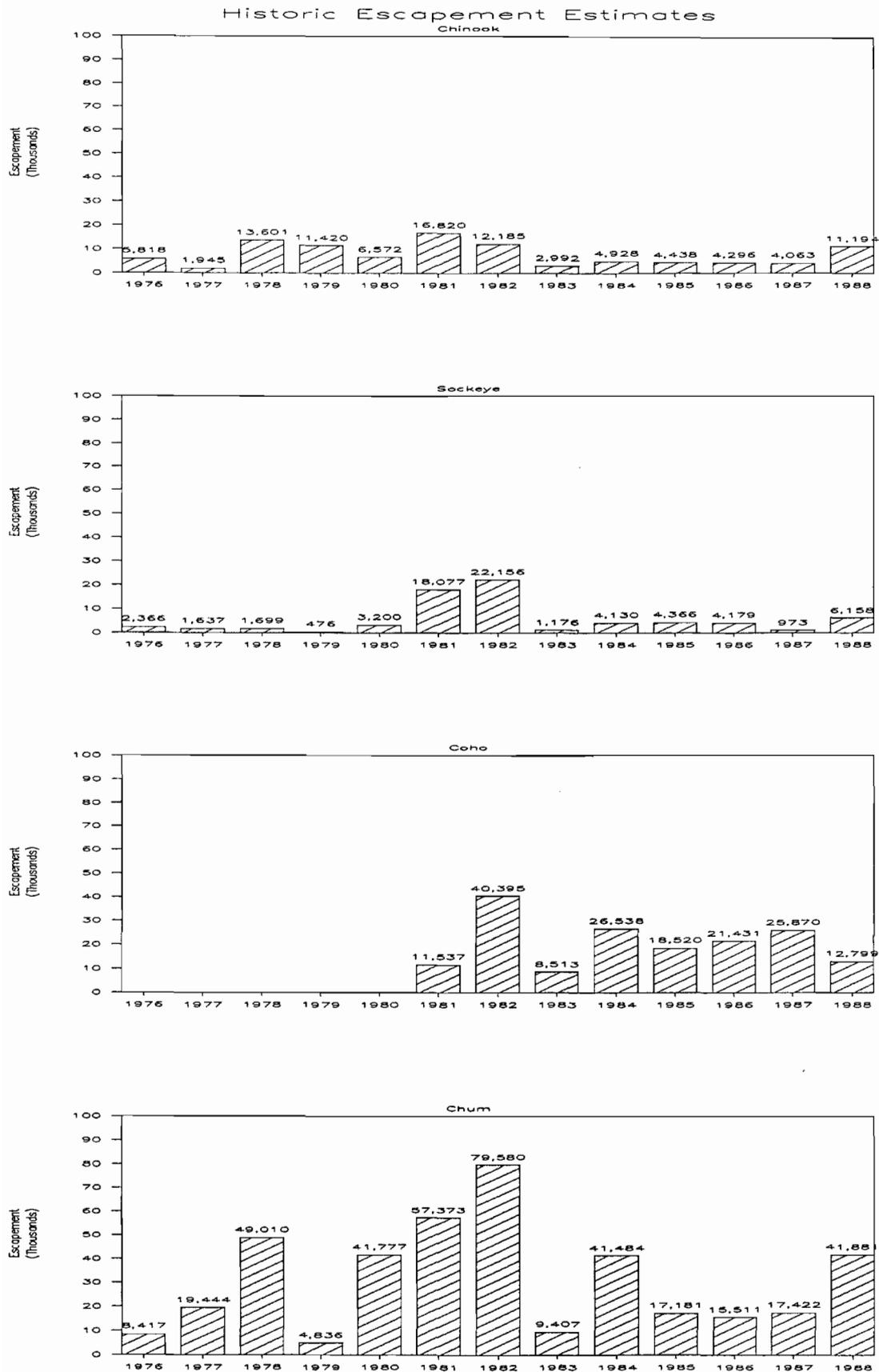


Figure 8. Estimated annual weir escapements, (1988 revised), Kogruklu River, 1976-1988.

Appendix A. Estimated daily and cumulative proportions of salmon escapements, Kogrukluk Weir, 1988.

Date	Chinook		Sockeye		Coho		Chum	
	Daily Prop. a	Cum. Prop. a						
15-Jun	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00003	0.00003
16-Jun	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00004
17-Jun	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00007	0.00011
18-Jun	0.00006	0.00006	0.00000	0.00000	0.00000	0.00000	0.00008	0.00019
19-Jun	0.00014	0.00020	0.00000	0.00000	0.00000	0.00000	0.00005	0.00024
20-Jun	0.00027	0.00048	0.00000	0.00000	0.00000	0.00000	0.00034	0.00058
21-Jun	0.00059	0.00107	0.00024	0.00024	0.00000	0.00000	0.00055	0.00113
22-Jun	0.00119	0.00226	0.00031	0.00055	0.00000	0.00000	0.00072	0.00186
23-Jun	0.00251	0.00477	0.00105	0.00160	0.00000	0.00000	0.00164	0.00350
24-Jun	0.00462	0.00938	0.00276	0.00437	0.00000	0.00000	0.00223	0.00573
25-Jun	0.00950	0.01889	0.00420	0.00857	0.00000	0.00000	0.00228	0.00800
26-Jun	0.00594	0.02483	0.00503	0.01360	0.00000	0.00000	0.00379	0.01179
27-Jun	0.01901	0.04384	0.00713	0.02074	0.00000	0.00000	0.00717	0.01896
28-Jun	0.01984	0.06368	0.01228	0.03301	0.00000	0.00000	0.02068	0.03964
29-Jun	0.03166	0.09533	0.02986	0.06287	0.00000	0.00000	0.03891	0.07855
30-Jun	0.03338	0.12872	0.03898	0.10186	0.00000	0.00000	0.03876	0.11731
01-Jul	0.03665	0.16537	0.05386	0.15571	0.00000	0.00000	0.04555	0.16285
02-Jul	0.05370	0.21906	0.06923	0.22494	0.00000	0.00000	0.06043	0.22329
03-Jul	0.05221	0.27127	0.05198	0.27692	0.00000	0.00000	0.06200	0.28528
04-Jul	0.04395	0.31523	0.03450	0.31143	0.00000	0.00000	0.03621	0.32150
05-Jul	0.03118	0.34641	0.01218	0.32361	0.00000	0.00000	0.04405	0.36555
06-Jul	0.04154	0.38795	0.02436	0.34797	0.00000	0.00000	0.03295	0.39850
07-Jul	0.06218	0.45013	0.04596	0.39393	0.00000	0.00000	0.04045	0.43895
08-Jul	0.05208	0.50221	0.07730	0.47123	0.00000	0.00000	0.04678	0.48573
09-Jul	0.05101	0.55322	0.08201	0.55324	0.00000	0.00000	0.06569	0.55141
10-Jul	0.06111	0.61433	0.06805	0.62128	0.00000	0.00000	0.05136	0.60277
11-Jul	0.06289	0.67722	0.08234	0.70362	0.00000	0.00000	0.06299	0.66576
12-Jul	0.05878	0.73601	0.05928	0.76290	0.00000	0.00000	0.06292	0.72868
13-Jul	0.04395	0.77996	0.03881	0.80171	0.00000	0.00000	0.04680	0.77548
14-Jul	0.05316	0.83312	0.04434	0.84605	0.00000	0.00000	0.04962	0.82510
15-Jul	0.04020	0.87332	0.04482	0.89087	0.00000	0.00000	0.04231	0.86741
16-Jul	0.02778	0.90110	0.02907	0.91994	0.00000	0.00000	0.02381	0.89121
17-Jul	0.01340	0.91450	0.01770	0.93764	0.00000	0.00000	0.01736	0.90857
18-Jul	0.00920	0.92371	0.01348	0.95112	0.00000	0.00000	0.00979	0.91836
19-Jul	0.01108	0.93478	0.00747	0.95859	0.00000	0.00000	0.01096	0.92932
20-Jul	0.00420	0.93898	0.00601	0.96460	0.00008	0.00008	0.00800	0.93732
21-Jul	0.00956	0.94854	0.00650	0.97109	0.00000	0.00008	0.00821	0.94553
22-Jul	0.00965	0.95819	0.00471	0.97580	0.00000	0.00008	0.00549	0.95103
23-Jul	0.00750	0.96569	0.00536	0.98116	0.00000	0.00008	0.00461	0.95563
24-Jul	0.00500	0.97070	0.00455	0.98571	0.00008	0.00016	0.00544	0.96108
25-Jul	0.00411	0.97481	0.00146	0.98717	0.00000	0.00016	0.00227	0.96335
26-Jul	0.00339	0.97820	0.00146	0.98863	0.00000	0.00016	0.00296	0.96631
27-Jul	0.00241	0.98061	0.00065	0.98928	0.00000	0.00016	0.00246	0.96877
28-Jul	0.00143	0.98204	0.00162	0.99091	0.00000	0.00016	0.00284	0.97161
29-Jul	0.00241	0.98446	0.00097	0.99188	0.00000	0.00016	0.00232	0.97392
30-Jul	0.00277	0.98722	0.00146	0.99334	0.00000	0.00016	0.00351	0.97743
31-Jul	0.00205	0.98928	0.00195	0.99529	0.00000	0.00016	0.00320	0.98063
01-Aug	0.00000	0.98928	0.00000	0.99529	0.00000	0.00016	0.00146	0.98209
02-Aug	0.00000	0.98928	0.00000	0.99529	0.00000	0.00016	0.00146	0.98355
03-Aug	0.00036	0.98964	0.00016	0.99545	0.00000	0.00016	0.00170	0.98524
04-Aug	0.00107	0.99071	0.00049	0.99594	0.00000	0.00016	0.00172	0.98696
05-Aug	0.00054	0.99124	0.00049	0.99643	0.00000	0.00016	0.00146	0.98842
06-Aug	0.00063	0.99187	0.00032	0.99675	0.00031	0.00047	0.00148	0.98990
07-Aug	0.00054	0.99241	0.00016	0.99691	0.00047	0.00094	0.00131	0.99121
08-Aug	0.00089	0.99330	0.00000	0.99691	0.00086	0.00180	0.00127	0.99248
09-Aug	0.00027	0.99357	0.00016	0.99708	0.00117	0.00297	0.00107	0.99355
10-Aug	0.00009	0.99366	0.00049	0.99756	0.00195	0.00492	0.00112	0.99468
11-Aug	0.00045	0.99410	0.00016	0.99773	0.00297	0.00789	0.00084	0.99551
12-Aug	0.00089	0.99500	0.00016	0.99789	0.00625	0.01414	0.00088	0.99639
13-Aug	0.00018	0.99518	0.00016	0.99805	0.00672	0.02086	0.00043	0.99682
14-Aug	0.00027	0.99544	0.00016	0.99821	0.00359	0.02446	0.00038	0.99721
15-Aug	0.00018	0.99562	0.00000	0.99821	0.00195	0.02641	0.00017	0.99737
16-Aug	0.00027	0.99589	0.00000	0.99821	0.00820	0.03461	0.00031	0.99768
17-Aug	0.00045	0.99634	0.00000	0.99821	0.01227	0.04688	0.00048	0.99816
18-Aug	0.00036	0.99669	0.00032	0.99854	0.02016	0.06704	0.00048	0.99864
19-Aug	0.00027	0.99696	0.00016	0.99870	0.01578	0.08282	0.00036	0.99900
20-Aug	0.00027	0.99723	0.00000	0.99870	0.02266	0.10548	0.00029	0.99928
21-Aug	0.00027	0.99750	0.00016	0.99886	0.02750	0.13298	0.00029	0.99957
22-Aug	0.00027	0.99777	0.00016	0.99903	0.02992	0.16291	0.00012	0.99969

-continued-

Date	Chinook		Sockeye		Coho		Chum	
	Daily Prop.	Cum. Prop.						
23-Aug	0.00018	0.99795	0.00000	0.99903	0.02524	0.18814	0.00021	0.99990
24-Aug	0.00000	0.99795	0.00000	0.99903	0.03039	0.21854	0.00002	0.99993
25-Aug	0.00009	0.99803	0.00000	0.99903	0.02016	0.23869	0.00000	0.99993
26-Aug	0.00009	0.99812	0.00000	0.99903	0.07016	0.30886	0.00000	0.99993
27-Aug	0.00009	0.99821	0.00016	0.99919	0.02953	0.33839	0.00002	0.99995
28-Aug	0.00036	0.99857	0.00000	0.99919	0.04829	0.38668	0.00000	0.99995
29-Aug	0.00009	0.99866	0.00000	0.99919	0.04321	0.42988	0.00002	0.99998
30-Aug	0.00009	0.99875	0.00000	0.99919	0.06016	0.49005	0.00000	0.99998
31-Aug	0.00009	0.99884	0.00000	0.99919	0.03860	0.52864	0.00000	0.99998
01-Sep	0.00009	0.99893	0.00016	0.99935	0.02578	0.55443	0.00000	0.99998
02-Sep	0.00009	0.99902	0.00016	0.99951	0.02883	0.58326	0.00000	0.99998
03-Sep	0.00000	0.99902	0.00016	0.99968	0.01860	0.60185	0.00002	1.00000
04-Sep	0.00009	0.99911	0.00000	0.99968	0.01852	0.62037	0.00000	1.00000
05-Sep	0.00009	0.99920	0.00000	0.99968	0.01336	0.63373	0.00000	1.00000
06-Sep	0.00009	0.99929	0.00016	0.99984	0.01328	0.64701	0.00000	1.00000
07-Sep	0.00000	0.99929	0.00000	0.99984	0.01195	0.65897	0.00000	1.00000
08-Sep	0.00027	0.99955	0.00000	0.99984	0.03477	0.69374	0.00000	1.00000
09-Sep	0.00000	0.99955	0.00000	0.99984	0.01399	0.70772	0.00000	1.00000
10-Sep	0.00000	0.99955	0.00000	0.99984	0.03391	0.74163	0.00000	1.00000
11-Sep	0.00000	0.99955	0.00000	0.99984	0.07548	0.81711	0.00000	1.00000
12-Sep	0.00000	0.99955	0.00000	0.99984	0.03407	0.85117	0.00000	1.00000
13-Sep	0.00027	0.99982	0.00016	1.00000	0.02008	0.87125	0.00000	1.00000
14-Sep	0.00018	1.00000	0.00000	1.00000	0.01188	0.88313	0.00000	1.00000
15-Sep	0.00000	1.00000	0.00000	1.00000	0.00875	0.89188	0.00000	1.00000
16-Sep	0.00000	1.00000	0.00000	1.00000	0.00945	0.90133	0.00000	1.00000
17-Sep	0.00000	1.00000	0.00000	1.00000	0.01453	0.91587	0.00000	1.00000
18-Sep	0.00000	1.00000	0.00000	1.00000	0.01584	0.93170	0.00000	1.00000
19-Sep	0.00000	1.00000	0.00000	1.00000	0.01218	0.94388	0.00000	1.00000
20-Sep	0.00000	1.00000	0.00000	1.00000	0.01191	0.95580	0.00000	1.00000
21-Sep	0.00000	1.00000	0.00000	1.00000	0.00687	0.96266	0.00000	1.00000
22-Sep	0.00000	1.00000	0.00000	1.00000	0.01025	0.97291	0.00000	1.00000
23-Sep	0.00000	1.00000	0.00000	1.00000	0.00566	0.97857	0.00000	1.00000
24-Sep	0.00000	1.00000	0.00000	1.00000	0.00550	0.98408	0.00000	1.00000
25-Sep	0.00000	1.00000	0.00000	1.00000	0.00251	0.98658	0.00000	1.00000
26-Sep	0.00000	1.00000	0.00000	1.00000	0.00270	0.98928	0.00000	1.00000
27-Sep	0.00000	1.00000	0.00000	1.00000	0.00236	0.99164	0.00000	1.00000
28-Sep	0.00000	1.00000	0.00000	1.00000	0.00157	0.99321	0.00000	1.00000
29-Sep	0.00000	1.00000	0.00000	1.00000	0.00131	0.99452	0.00000	1.00000
30-Sep	0.00000	1.00000	0.00000	1.00000	0.00078	0.99530	0.00000	1.00000
01-Oct	0.00000	1.00000	0.00000	1.00000	0.00079	0.99609	0.00000	1.00000
02-Oct	0.00000	1.00000	0.00000	1.00000	0.00107	0.99716	0.00000	1.00000
03-Oct	0.00000	1.00000	0.00000	1.00000	0.00094	0.99810	0.00000	1.00000
04-Oct	0.00000	1.00000	0.00000	1.00000	0.00079	0.99889	0.00000	1.00000
05-Oct	0.00000	1.00000	0.00000	1.00000	0.00072	0.99961	0.00000	1.00000
06-Oct	0.00000	1.00000	0.00000	1.00000	0.00039	1.00000	0.00000	1.00000

a Proportions presented for 15 June - 4 July, 1 - 2 August, and 18 September - 6 October are based on estimated rather than actual counts.

Appendix B. Estimated daily and cumulative proportions of weir accumulation of salmon carcasses, Kogruk-luk Weir, 1988.

Date	Chinook		Sockeye		Coho		Chum	
	Daily Prop.	Cum. Prop.						
15-Jun								
16-Jun								
17-Jun								
18-Jun								
19-Jun								
20-Jun								
21-Jun								
22-Jun								
23-Jun								
24-Jun								
25-Jun								
26-Jun								
27-Jun								
28-Jun								
29-Jun								
30-Jun								
01-Jul								
02-Jul								
03-Jul								
04-Jul								
05-Jul	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00251	0.00251
06-Jul	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00263	0.00514
07-Jul	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00251	0.00764
08-Jul	0.00000	0.00000	0.00308	0.00308	0.00000	0.00000	0.00463	0.01228
09-Jul	0.00000	0.00000	0.00000	0.00308	0.00000	0.00000	0.00864	0.02092
10-Jul	0.00000	0.00000	0.00000	0.00308	0.00000	0.00000	0.00839	0.02931
11-Jul	0.00000	0.00000	0.00308	0.00615	0.00000	0.00000	0.00764	0.03695
12-Jul	0.00056	0.00056	0.00000	0.00615	0.00000	0.00000	0.02205	0.05900
13-Jul	0.00000	0.00056	0.00308	0.00923	0.00000	0.00000	0.01065	0.06965
14-Jul	0.00167	0.00223	0.00308	0.01231	0.00000	0.00000	0.01704	0.08668
15-Jul	0.00167	0.00391	0.00000	0.01231	0.00000	0.00000	0.02618	0.11286
16-Jul	0.00056	0.00446	0.00000	0.01231	0.00000	0.00000	0.04009	0.15295
17-Jul	0.00167	0.00614	0.00308	0.01538	0.00000	0.00000	0.07090	0.22385
18-Jul	0.00279	0.00893	0.00000	0.01538	0.00000	0.00000	0.03683	0.26068
19-Jul	0.00279	0.01172	0.00308	0.01846	0.00000	0.00000	0.04697	0.30765
20-Jul	0.00725	0.01897	0.00308	0.02154	0.00000	0.00000	0.07353	0.38119
21-Jul	0.01283	0.03180	0.00000	0.02154	0.00000	0.00000	0.06802	0.44920
22-Jul	0.00837	0.04017	0.00308	0.02462	0.00000	0.00000	0.04009	0.48929
23-Jul	0.01283	0.05300	0.00000	0.02462	0.00000	0.00000	0.04935	0.53864
24-Jul	0.02789	0.08089	0.00308	0.02769	0.00000	0.00000	0.08105	0.61969
25-Jul	0.02064	0.10153	0.00000	0.02769	0.00000	0.00000	0.02806	0.64775
26-Jul	0.05132	0.15286	0.00000	0.02769	0.00000	0.00000	0.07027	0.71803
27-Jul	0.02734	0.18020	0.00308	0.03077	0.00000	0.00000	0.02806	0.74609
28-Jul	0.05300	0.23319	0.00308	0.03385	0.00000	0.00000	0.04860	0.79469
29-Jul	0.05021	0.28340	0.00308	0.03692	0.00000	0.00000	0.04284	0.83753
30-Jul	0.07308	0.35649	0.00615	0.04308	0.00000	0.00000	0.02906	0.86659
31-Jul	0.06430	0.42078	0.00615	0.04923	0.00000	0.00000	0.02317	0.88977
01-Aug	0.05551	0.47629	0.00615	0.05538	0.00000	0.00000	0.01729	0.90705
02-Aug	0.04672	0.52301	0.00615	0.06154	0.00000	0.00000	0.01140	0.91845
03-Aug	0.03794	0.56095	0.00615	0.06769	0.00000	0.00000	0.00551	0.92396
04-Aug	0.05188	0.61283	0.01846	0.08615	0.00000	0.00000	0.00852	0.93248
05-Aug	0.06471	0.67755	0.04615	0.13231	0.00000	0.00000	0.01253	0.94501
06-Aug	0.05021	0.72775	0.03077	0.16308	0.00000	0.00000	0.00789	0.95290
07-Aug	0.04463	0.77238	0.06769	0.23077	0.00000	0.00000	0.00451	0.95741
08-Aug	0.04351	0.81590	0.04308	0.27385	0.00000	0.00000	0.00551	0.96292
09-Aug	0.03124	0.84714	0.06462	0.33846	0.00000	0.00000	0.00438	0.96731
10-Aug	0.03794	0.88508	0.06462	0.40308	0.00000	0.00000	0.00426	0.97156
11-Aug	0.01897	0.90404	0.03692	0.44000	0.00000	0.00000	0.00238	0.97394
12-Aug	0.02176	0.92580	0.09538	0.53538	0.00000	0.00000	0.00225	0.97620
13-Aug	0.01172	0.93752	0.04923	0.58462	0.00000	0.00000	0.00100	0.97720
14-Aug	0.01283	0.95035	0.06154	0.64615	0.00000	0.00000	0.00276	0.97996
15-Aug	0.00781	0.95816	0.03385	0.68000	0.00000	0.00000	0.00100	0.98096
16-Aug	0.00725	0.96541	0.05538	0.73538	0.00000	0.00000	0.00326	0.98422
17-Aug	0.00446	0.96987	0.03385	0.76923	0.00000	0.00000	0.00225	0.98647
18-Aug	0.00669	0.97657	0.03692	0.80615	0.00000	0.00000	0.00301	0.98948
19-Aug	0.00948	0.98605	0.03692	0.84308	0.00000	0.00000	0.00163	0.99111
20-Aug	0.00502	0.99107	0.02769	0.87077	0.12500	0.12500	0.00175	0.99286
21-Aug	0.00335	0.99442	0.02769	0.89846	0.00000	0.12500	0.00138	0.99424
22-Aug	0.00000	0.99442	0.01846	0.91692	0.00000	0.12500	0.00050	0.99474

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Date	Chinook		Sockeye		Coho		Chum	
	Daily Prop.	Cum. Prop.						
23-Aug	0.00167	0.99609	0.01538	0.93231	0.00000	0.12500	0.00088	0.99562
24-Aug	0.00000	0.99609	0.00923	0.94154	0.00000	0.12500	0.00050	0.99612
25-Aug	0.00000	0.99609	0.01846	0.96000	0.00000	0.12500	0.00113	0.99724
26-Aug	0.00112	0.99721	0.00923	0.96923	0.00000	0.12500	0.00075	0.99800
27-Aug	0.00000	0.99721	0.01231	0.98154	0.00000	0.12500	0.00050	0.99850
28-Aug	0.00000	0.99721	0.00000	0.98154	0.00000	0.12500	0.00025	0.99875
29-Aug	0.00056	0.99777	0.00308	0.98462	0.00000	0.12500	0.00000	0.99875
30-Aug	0.00056	0.99833	0.00923	0.99385	0.00000	0.12500	0.00038	0.99912
31-Aug	0.00000	0.99833	0.00000	0.99385	0.00000	0.12500	0.00000	0.99912
01-Sep	0.00000	0.99833	0.00308	0.99692	0.00000	0.12500	0.00038	0.99950
02-Sep	0.00000	0.99833	0.00000	0.99692	0.00000	0.12500	0.00000	0.99950
03-Sep	0.00000	0.99833	0.00000	0.99692	0.00000	0.12500	0.00000	0.99950
04-Sep	0.00000	0.99833	0.00000	0.99692	0.00000	0.12500	0.00013	0.99962
05-Sep	0.00000	0.99833	0.00000	0.99692	0.00000	0.12500	0.00000	0.99962
06-Sep	0.00000	0.99833	0.00308	1.00000	0.00000	0.12500	0.00013	0.99975
07-Sep	0.00000	0.99833	0.00000	1.00000	0.00000	0.12500	0.00000	0.99975
08-Sep	0.00000	0.99833	0.00000	1.00000	0.00000	0.12500	0.00000	0.99975
09-Sep	0.00056	0.99888	0.00000	1.00000	0.00000	0.12500	0.00025	1.00000
10-Sep	0.00000	0.99888	0.00000	1.00000	0.00000	0.12500	0.00000	1.00000
11-Sep	0.00000	0.99888	0.00000	1.00000	0.12500	0.25000	0.00000	1.00000
12-Sep	0.00000	0.99888	0.00000	1.00000	0.00000	0.25000	0.00000	1.00000
13-Sep	0.00000	0.99888	0.00000	1.00000	0.00000	0.25000	0.00000	1.00000
14-Sep	0.00056	0.99944	0.00000	1.00000	0.37500	0.62500	0.00000	1.00000
15-Sep	0.00000	0.99944	0.00000	1.00000	0.00000	0.62500	0.00000	1.00000
16-Sep	0.00000	0.99944	0.00000	1.00000	0.00000	0.62500	0.00000	1.00000
17-Sep	0.00056	1.00000	0.00000	1.00000	0.37500	1.00000	0.00000	1.00000
18-Sep								
19-Sep								
20-Sep								
21-Sep								
22-Sep								
23-Sep								
24-Sep								
25-Sep								
26-Sep								
27-Sep								
28-Sep								
29-Sep								
30-Sep								
01-Oct								
02-Oct								
03-Oct								
04-Oct								
05-Oct								
06-Oct								

a Proportions for 31 July to 2 August are based on estimated carcass counts.

Appendix C.1. Chinook salmon counts expanded for inclusion in the timing database, 1976, 1978, 1979, 1981, 1982, 1984, 1985, 1986, and 1988, Kogrukluk River, Alaska.

DAILY COUNTS a													
DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
15-Jun		b			b			b				b	
16-Jun													
17-Jun						0.0							
18-Jun			0.0			1.0	0.0						
19-Jun			1.0			2.0	1.0		1				
20-Jun			2.0	0.0		5.0	2.0		0				
21-Jun			3.0	1.0		10.0	5.0		0				
22-Jun			5.0	2.0		20.0	15.0		0				
23-Jun			8.0	4.0		40.0	30.0		2				
24-Jun			10.0	8.0		80.0	45.0		1	0			0.0
25-Jun			20.0	15.0		160.0	65.0	2	2	1			3.0
26-Jun			50.0	30.0		100.0	90.0	4	1	2.0			5.0
27-Jun			80.0	45.0		320.0	120.0	5	4	3.0			10.0
28-Jun			100.0	25.0		334	150.0	17	57	5.0			30.0
29-Jun	0		112	75.0		533	185.0	29	87	10.0	0		50.0
30-Jun	5		65	85.0		562	230.0	79	45	20.0	3		80.0
01-Jul	16		342	130.0		617	290.0	31	315	20.0	25		50.0
02-Jul	2		118	156		904	355.0	317	304	50.0	97		110.0
03-Jul	18		485	107		879	420.0		254	120.0	67		215.0
04-Jul	15		804	258		740	520.0		139	45.0	91		275.0
05-Jul	70		629	371		1001	650.0		97	35.0	61		349
06-Jul	43		345	382		1080	780.0	75	238	22.0	51		465
07-Jul	66		253	309		1215	840.0	62	174	60	60		696
08-Jul	157		619	390		773	875.0	48	144	106	130		583
09-Jul	312		884	343		1047	960	241	165	119	77		571
10-Jul	461		671	619		983	609	71	23	416	482		684
11-Jul	347		701	462		749	465	51	104	166	282		704
12-Jul	274		632	760		526	380		285	245	109		658
13-Jul	716		597	932		491	349		262	305	457		492
14-Jul	312	5	613	982		458	371		324	269	281		595
15-Jul	251	9	673	548		560	159		331	146	304	233	450
16-Jul	247	46	727	700		452	424		276	328	135	347	311
17-Jul	287	82	652	670		379	334		225	175	194		150
18-Jul	424	64	488	464		322	231		105	299	299.0		103
19-Jul	283	223	561	355		298	165		99	259	259.0		124
20-Jul	94	193	475	334		243	192		137	177	197.0		47
21-Jul	392	135	271	345		187	102		124	151	151.0		107
22-Jul	190	148	302	178		183	47		111	72	92.0		108
23-Jul	171	117	203	131		118	81		89	104	104.0		84
24-Jul	82	151	299	308		78	54		69	170	215.0		56
25-Jul	87	125	180	116.0		42	61		36	116	116.0		46
26-Jul	56	75	114	140.0		41	39		44	130	140.0		38
27-Jul	50		92	66.0		31	52		30	66	66.0		27
28-Jul	20		72	98.0		36	34		37	78	98.0		16
29-Jul	28		64	55.0		31	20		32	55	55.0		27
30-Jul	24		59	38.0		24	32		26	28	38.0		31
31-Jul	21.0		52.0	33.0			24		22	33	33.0		23

- continued -

DAILY COUNTS a

DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
01-Aug	18.0		34.0	42.0			16		16	35	42.0		16.7
02-Aug	15.0		20.0	35.0			18		22	35	35.0		10.3
03-Aug	12.0		32.0	26.0			27		18	24	26.0		4
04-Aug	9.0		24.0	7.0			20		12	7	7.0		12
05-Aug	6.0		16.0	15.0			11		4	14	15.0		6
06-Aug	3.0		18.0	14.0			8		3	14	14.0		7
07-Aug	3.0		27.0	3.0			10		4	2	3.0		6
08-Aug	1.0		20.0	18.0			5		8	18	18.0		10
09-Aug	1.0		11.0	9.0			4		3	8	9.0		3
10-Aug	2.0		8.0	19.0			3		1	19	19.0	15	1
11-Aug	5.0		10.0	14.0			5		3	13	14.0	11	5
12-Aug	2.0		5.0	12.0			6		1	12	12.0	18	10
13-Aug	1.0		4.0	6.0			5		5	5	6.0	11	2
14-Aug	1.0		3.0	6.0			1	2	1	6	6.0	15	3
15-Aug	0.0		1.0	2.0			0	1	1	1	2.0	9	2
16-Aug			0.0	0.0			1	0	1	0	0.0	14	3
17-Aug			1.0	6.0			0	0	1	0	6.0	17	5
18-Aug			0.0	3.0				1	0	0	3.0	11	4
19-Aug				9.0				1	2	0	9.0	6	3
20-Aug				7.0				0	0	0	7.0	12	3
21-Aug				4.0				1	1	0	2	11	3
22-Aug				5.0				1		0	7	5	3
23-Aug				3.0				1		0	4	5	2
24-Aug				2.0						0	1	6	0
25-Aug				1.0						0	0	5	1
26-Aug				0.0						0	0	2	1
27-Aug										0	1	2	1
28-Aug										0	1	2	4
29-Aug										0	0	0	1

a Data which appear as real numbers with a single decimal place are subjectively estimated. Data which appear in integer form are actual counts.

b Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix C.2. Daily proportions of estimated chinook salmon counts, Kogrukluk River, 1976-1988.

DAILY PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
2	16-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
3	17-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
4	18-Jun	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0000		0.0000
5	19-Jun	0.0000		0.0001	0.0000		0.0001	0.0001		0.0002	0.0000	0.0000		0.0000
6	20-Jun	0.0000		0.0001	0.0000		0.0003	0.0002		0.0000	0.0000	0.0000		0.0000
7	21-Jun	0.0000		0.0002	0.0001		0.0006	0.0005		0.0000	0.0000	0.0000		0.0000
8	22-Jun	0.0000		0.0004	0.0002		0.0012	0.0014		0.0000	0.0000	0.0000		0.0000
9	23-Jun	0.0000		0.0006	0.0004		0.0024	0.0027		0.0004	0.0000	0.0000		0.0000
10	24-Jun	0.0000		0.0007	0.0007		0.0048	0.0041		0.0002	0.0000	0.0000		0.0000
11	25-Jun	0.0000		0.0015	0.0013		0.0096	0.0059		0.0004	0.0002	0.0000		0.0004
12	26-Jun	0.0000		0.0037	0.0026		0.0060	0.0082		0.0002	0.0004	0.0000		0.0006
13	27-Jun	0.0000		0.0059	0.0040		0.0192	0.0109		0.0008	0.0006	0.0000		0.0012
14	28-Jun	0.0000		0.0073	0.0022		0.0201	0.0136		0.0116	0.0011	0.0000		0.0035
15	29-Jun	0.0000		0.0082	0.0066		0.0320	0.0168		0.0177	0.0022	0.0000		0.0059
16	30-Jun	0.0009		0.0048	0.0075		0.0337	0.0209		0.0091	0.0043	0.0006		0.0094
17	01-Jul	0.0029		0.0250	0.0115		0.0370	0.0264		0.0639	0.0043	0.0050		0.0059
18	02-Jul	0.0004		0.0086	0.0138		0.0543	0.0323		0.0617	0.0108	0.0193		0.0129
19	03-Jul	0.0032		0.0355	0.0094		0.0528	0.0382		0.0515	0.0260	0.0133		0.0253
20	04-Jul	0.0027		0.0588	0.0228		0.0444	0.0473		0.0282	0.0097	0.0181		0.0323
21	05-Jul	0.0125		0.0460	0.0327		0.0601	0.0591		0.0197	0.0076	0.0121		0.0410
22	06-Jul	0.0077		0.0252	0.0337		0.0648	0.0710		0.0483	0.0048	0.0101		0.0547
23	07-Jul	0.0118		0.0185	0.0273		0.0730	0.0764		0.0353	0.0130	0.0119		0.0818
24	08-Jul	0.0280		0.0453	0.0344		0.0464	0.0796		0.0292	0.0229	0.0258		0.0685
25	09-Jul	0.0557		0.0647	0.0303		0.0629	0.0873		0.0335	0.0258	0.0153		0.0671
26	10-Jul	0.0823		0.0491	0.0546		0.0590	0.0554		0.0047	0.0901	0.0957		0.0804
27	11-Jul	0.0620		0.0513	0.0407		0.0450	0.0423		0.0211	0.0359	0.0560		0.0828
28	12-Jul	0.0489		0.0462	0.0670		0.0316	0.0346		0.0578	0.0530	0.0216		0.0774
29	13-Jul	0.1279		0.0437	0.0822		0.0295	0.0317		0.0532	0.0660	0.0907		0.0578
30	14-Jul	0.0557		0.0449	0.0866		0.0275	0.0337		0.0657	0.0582	0.0558		0.0700
31	15-Jul	0.0448		0.0492	0.0483		0.0336	0.0145		0.0672	0.0316	0.0603		0.0529
32	16-Jul	0.0441		0.0532	0.0617		0.0271	0.0386		0.0560	0.0710	0.0268		0.0366
33	17-Jul	0.0513		0.0477	0.0591		0.0228	0.0304		0.0457	0.0379	0.0385		0.0176
34	18-Jul	0.0757		0.0357	0.0409		0.0193	0.0210		0.0213	0.0647	0.0593		0.0121
35	19-Jul	0.0505		0.0410	0.0313		0.0179	0.0150		0.0201	0.0561	0.0514		0.0146
36	20-Jul	0.0168		0.0348	0.0295		0.0146	0.0175		0.0278	0.0383	0.0391		0.0055
37	21-Jul	0.0700		0.0198	0.0304		0.0112	0.0093		0.0252	0.0327	0.0300		0.0126
38	22-Jul	0.0339		0.0221	0.0157		0.0110	0.0043		0.0225	0.0156	0.0183		0.0127
39	23-Jul	0.0305		0.0149	0.0116		0.0071	0.0074		0.0181	0.0225	0.0206		0.0099
40	24-Jul	0.0146		0.0219	0.0272		0.0047	0.0049		0.0140	0.0368	0.0427		0.0066
41	25-Jul	0.0155		0.0132	0.0102		0.0025	0.0055		0.0073	0.0251	0.0230		0.0054
42	26-Jul	0.0100		0.0083	0.0123		0.0025	0.0035		0.0089	0.0281	0.0278		0.0045
43	27-Jul	0.0089		0.0067	0.0058		0.0019	0.0047		0.0061	0.0143	0.0131		0.0032
44	28-Jul	0.0036		0.0053	0.0086		0.0022	0.0031		0.0075	0.0169	0.0195		0.0019
45	29-Jul	0.0050		0.0047	0.0049		0.0019	0.0018		0.0065	0.0119	0.0109		0.0032
46	30-Jul	0.0043		0.0043	0.0034		0.0014	0.0029		0.0053	0.0061	0.0075		0.0036
47	31-Jul	0.0038		0.0038	0.0029		0.0000	0.0022		0.0045	0.0071	0.0066		0.0027

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DAILY PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
48	01-Aug	0.0032	a	0.0025	0.0037	a	0.0000	0.0015	a	0.0032	0.0076	0.0083	a	0.0020
49	02-Aug	0.0027		0.0015	0.0031		0.0000	0.0016		0.0045	0.0076	0.0069		0.0012
50	03-Aug	0.0021		0.0023	0.0023		0.0000	0.0025		0.0037	0.0052	0.0052		0.0005
51	04-Aug	0.0016		0.0018	0.0006		0.0000	0.0018		0.0024	0.0015	0.0014		0.0014
52	05-Aug	0.0011		0.0012	0.0013		0.0000	0.0010		0.0008	0.0030	0.0030		0.0007
53	06-Aug	0.0005		0.0013	0.0012		0.0000	0.0007		0.0006	0.0030	0.0028		0.0008
54	07-Aug	0.0005		0.0020	0.0003		0.0000	0.0009		0.0008	0.0004	0.0006		0.0007
55	08-Aug	0.0002		0.0015	0.0016		0.0000	0.0005		0.0016	0.0039	0.0036		0.0012
56	09-Aug	0.0002		0.0008	0.0008		0.0000	0.0004		0.0006	0.0017	0.0018		0.0004
57	10-Aug	0.0004		0.0006	0.0017		0.0000	0.0003		0.0002	0.0041	0.0038		0.0001
58	11-Aug	0.0009		0.0007	0.0012		0.0000	0.0005		0.0006	0.0028	0.0028		0.0006
59	12-Aug	0.0004		0.0004	0.0011		0.0000	0.0005		0.0002	0.0026	0.0024		0.0012
60	13-Aug	0.0002		0.0003	0.0005		0.0000	0.0005		0.0010	0.0011	0.0012		0.0002
61	14-Aug	0.0002		0.0002	0.0005		0.0000	0.0001		0.0002	0.0013	0.0012		0.0004
62	15-Aug	0.0000		0.0001	0.0002		0.0000	0.0000		0.0002	0.0002	0.0004		0.0002
63	16-Aug	0.0000		0.0000	0.0000		0.0000	0.0001		0.0002	0.0000	0.0000		0.0004
64	17-Aug	0.0000		0.0001	0.0005		0.0000	0.0000		0.0002	0.0000	0.0012		0.0006
65	18-Aug	0.0000		0.0000	0.0003		0.0000	0.0000		0.0000	0.0000	0.0006		0.0005
66	19-Aug	0.0000		0.0000	0.0008		0.0000	0.0000		0.0004	0.0000	0.0018		0.0004
67	20-Aug	0.0000		0.0000	0.0006		0.0000	0.0000		0.0000	0.0000	0.0014		0.0004
68	21-Aug	0.0000		0.0000	0.0004		0.0000	0.0000		0.0002	0.0000	0.0004		0.0004
69	22-Aug	0.0000		0.0000	0.0004		0.0000	0.0000		0.0000	0.0000	0.0014		0.0004
70	23-Aug	0.0000		0.0000	0.0003		0.0000	0.0000		0.0000	0.0000	0.0008		0.0002
71	24-Aug	0.0000		0.0000	0.0002		0.0000	0.0000		0.0000	0.0000	0.0002		0.0000
72	25-Aug	0.0000		0.0000	0.0001		0.0000	0.0000		0.0000	0.0000	0.0000		0.0001
73	26-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0001
74	27-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0002		0.0001
75	28-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0002		0.0005
76	29-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0001
TOTAL		1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix C.3. Cumulative proportions of estimated chinook salmon counts, Kogrukluk River, 1976-1988.

CUMULATIVE PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
2	16-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
3	17-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
4	18-Jun	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0000		0.0000
5	19-Jun	0.0000		0.0001	0.0000		0.0002	0.0001		0.0002	0.0000	0.0000		0.0000
6	20-Jun	0.0000		0.0002	0.0000		0.0005	0.0003		0.0002	0.0000	0.0000		0.0000
7	21-Jun	0.0000		0.0004	0.0001		0.0011	0.0007		0.0002	0.0000	0.0000		0.0000
8	22-Jun	0.0000		0.0008	0.0003		0.0023	0.0021		0.0002	0.0000	0.0000		0.0000
9	23-Jun	0.0000		0.0014	0.0006		0.0047	0.0048		0.0006	0.0000	0.0000		0.0000
10	24-Jun	0.0000		0.0021	0.0013		0.0095	0.0089		0.0008	0.0000	0.0000		0.0000
11	25-Jun	0.0000		0.0036	0.0026		0.0191	0.0148		0.0012	0.0002	0.0000		0.0004
12	26-Jun	0.0000		0.0072	0.0053		0.0251	0.0230		0.0014	0.0006	0.0000		0.0009
13	27-Jun	0.0000		0.0131	0.0093		0.0443	0.0339		0.0022	0.0013	0.0000		0.0021
14	28-Jun	0.0000		0.0204	0.0115		0.0644	0.0476		0.0138	0.0024	0.0000		0.0056
15	29-Jun	0.0000		0.0286	0.0181		0.0964	0.0644		0.0315	0.0045	0.0000		0.0115
16	30-Jun	0.0009		0.0334	0.0256		0.1301	0.0853		0.0406	0.0089	0.0006		0.0209
17	01-Jul	0.0038		0.0584	0.0370		0.1672	0.1117		0.1045	0.0132	0.0056		0.0268
18	02-Jul	0.0041		0.0670	0.0508		0.2214	0.1440		0.1662	0.0240	0.0248		0.0397
19	03-Jul	0.0073		0.1025	0.0602		0.2742	0.1822		0.2177	0.0500	0.0381		0.0650
20	04-Jul	0.0100		0.1613	0.0830		0.3186	0.2295		0.2459	0.0598	0.0562		0.0974
21	05-Jul	0.0225		0.2074	0.1157		0.3787	0.2886		0.2656	0.0673	0.0683		0.1384
22	06-Jul	0.0302		0.2326	0.1494		0.4436	0.3596		0.3139	0.0721	0.0784		0.1931
23	07-Jul	0.0420		0.2511	0.1767		0.5165	0.4360		0.3492	0.0851	0.0903		0.2749
24	08-Jul	0.0700		0.2964	0.2111		0.5630	0.5156		0.3784	0.1080	0.1161		0.3434
25	09-Jul	0.1257		0.3611	0.2413		0.6258	0.6029		0.4119	0.1338	0.1314		0.4106
26	10-Jul	0.2080		0.4102	0.2959		0.6848	0.6583		0.4166	0.2239	0.2271		0.4910
27	11-Jul	0.2700		0.4615	0.3367		0.7298	0.7006		0.4377	0.2598	0.2830		0.5738
28	12-Jul	0.3189		0.5077	0.4037		0.7614	0.7352		0.4955	0.3128	0.3047		0.6511
29	13-Jul	0.4468		0.5514	0.4859		0.7909	0.7669		0.5487	0.3789	0.3954		0.7090
30	14-Jul	0.5025		0.5963	0.5725		0.8184	0.8007		0.6144	0.4371	0.4512		0.7790
31	15-Jul	0.5473		0.6455	0.6208		0.8520	0.8152		0.6816	0.4687	0.5115		0.8319
32	16-Jul	0.5914		0.6987	0.6826		0.8791	0.8537		0.7376	0.5397	0.5383		0.8684
33	17-Jul	0.6427		0.7464	0.7417		0.9019	0.8841		0.7833	0.5776	0.5768		0.8861
34	18-Jul	0.7184		0.7821	0.7826		0.9212	0.9051		0.8046	0.6423	0.6362		0.8982
35	19-Jul	0.7689		0.8232	0.8139		0.9391	0.9201		0.8247	0.6984	0.6876		0.9128
36	20-Jul	0.7857		0.8579	0.8434		0.9537	0.9376		0.8525	0.7367	0.7267		0.9183
37	21-Jul	0.8557		0.8777	0.8738		0.9649	0.9469		0.8776	0.7694	0.7566		0.9309
38	22-Jul	0.8896		0.8998	0.8895		0.9759	0.9512		0.9002	0.7850	0.7749		0.9436
39	23-Jul	0.9202		0.9147	0.9010		0.9830	0.9585		0.9182	0.8075	0.7956		0.9534
40	24-Jul	0.9348		0.9366	0.9282		0.9877	0.9634		0.9322	0.8443	0.8382		0.9600
41	25-Jul	0.9504		0.9497	0.9384		0.9902	0.9690		0.9395	0.8695	0.8613		0.9654
42	26-Jul	0.9604		0.9581	0.9508		0.9927	0.9725		0.9485	0.8976	0.8890		0.9699
43	27-Jul	0.9693		0.9648	0.9566		0.9945	0.9773		0.9545	0.9119	0.9021		0.9731
44	28-Jul	0.9729		0.9701	0.9652		0.9967	0.9804		0.9621	0.9288	0.9216		0.9750
45	29-Jul	0.9779		0.9748	0.9701		0.9986	0.9822		0.9685	0.9407	0.9325		0.9781
46	30-Jul	0.9821		0.9791	0.9735		1.0000	0.9851		0.9738	0.9467	0.9401		0.9818
47	31-Jul	0.9859		0.9829	0.9764		1.0000	0.9873		0.9783	0.9539	0.9466		0.9845

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		CUMULATIVE PROPORTIONS												
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
48	01-Aug	0.9891		0.9854	0.9801		1.0000	0.9887		0.9815	0.9615	0.9549		0.9864
49	02-Aug	0.9918		0.9868	0.9832		1.0000	0.9904		0.9860	0.9690	0.9619		0.9877
50	03-Aug	0.9939		0.9892	0.9854		1.0000	0.9928		0.9897	0.9742	0.9671		0.9881
51	04-Aug	0.9955		0.9909	0.9861		1.0000	0.9946		0.9921	0.9758	0.9684		0.9895
52	05-Aug	0.9966		0.9921	0.9874		1.0000	0.9956		0.9929	0.9788	0.9714		0.9902
53	06-Aug	0.9971		0.9934	0.9886		1.0000	0.9964		0.9935	0.9818	0.9742		0.9911
54	07-Aug	0.9977		0.9954	0.9889		1.0000	0.9973		0.9943	0.9822	0.9748		0.9918
55	08-Aug	0.9979		0.9969	0.9905		1.0000	0.9977		0.9959	0.9861	0.9784		0.9929
56	09-Aug	0.9980		0.9977	0.9913		1.0000	0.9981		0.9966	0.9879	0.9802		0.9933
57	10-Aug	0.9984		0.9982	0.9929		1.0000	0.9984		0.9968	0.9920	0.9839		0.9934
58	11-Aug	0.9993		0.9990	0.9942		1.0000	0.9988		0.9974	0.9948	0.9867		0.9940
59	12-Aug	0.9996		0.9993	0.9952		1.0000	0.9994		0.9976	0.9974	0.9891		0.9952
60	13-Aug	0.9998		0.9996	0.9958		1.0000	0.9998		0.9986	0.9985	0.9903		0.9954
61	14-Aug	1.0000		0.9999	0.9963		1.0000	0.9999		0.9988	0.9998	0.9915		0.9958
62	15-Aug	1.0000		0.9999	0.9965		1.0000	0.9999		0.9990	1.0000	0.9919		0.9960
63	16-Aug	1.0000		0.9999	0.9965		1.0000	1.0000		0.9992	1.0000	0.9919		0.9964
64	17-Aug	1.0000		1.0000	0.9970		1.0000	1.0000		0.9994	1.0000	0.9931		0.9969
65	18-Aug	1.0000		1.0000	0.9973		1.0000	1.0000		0.9994	1.0000	0.9936		0.9974
66	19-Aug	1.0000		1.0000	0.9981		1.0000	1.0000		0.9998	1.0000	0.9954		0.9978
67	20-Aug	1.0000		1.0000	0.9987		1.0000	1.0000		0.9998	1.0000	0.9968		0.9981
68	21-Aug	1.0000		1.0000	0.9990		1.0000	1.0000		1.0000	1.0000	0.9972		0.9985
69	22-Aug	1.0000		1.0000	0.9995		1.0000	1.0000		1.0000	1.0000	0.9986		0.9988
70	23-Aug	1.0000		1.0000	0.9997		1.0000	1.0000		1.0000	1.0000	0.9994		0.9991
71	24-Aug	1.0000		1.0000	0.9999		1.0000	1.0000		1.0000	1.0000	0.9996		0.9991
72	25-Aug	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	0.9996		0.9992
73	26-Aug	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	0.9996		0.9993
74	27-Aug	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	0.9998		0.9994
75	28-Aug	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		0.9999
76	29-Aug	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000
	MAXIMUM	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix C.4. Mean date statistics of estimated chinook salmon counts, Kogrukluk River, 1976-1988.

DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
16-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
17-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
18-Jun	0.0000		0.0000	0.0000		0.0002	0.0000		0.0000	0.0000	0.0000		0.0000
19-Jun	0.0000		0.0004	0.0000		0.0006	0.0005		0.0010	0.0000	0.0000		0.0000
20-Jun	0.0000		0.0009	0.0000		0.0018	0.0011		0.0000	0.0000	0.0000		0.0000
21-Jun	0.0000		0.0015	0.0006		0.0042	0.0032		0.0000	0.0000	0.0000		0.0000
22-Jun	0.0000		0.0029	0.0014		0.0096	0.0109		0.0000	0.0000	0.0000		0.0000
23-Jun	0.0000		0.0053	0.0032		0.0216	0.0246		0.0037	0.0000	0.0000		0.0000
24-Jun	0.0000		0.0073	0.0071		0.0480	0.0409		0.0020	0.0000	0.0000		0.0000
25-Jun	0.0000		0.0161	0.0146		0.1057	0.0650		0.0045	0.0024	0.0000		0.0039
26-Jun	0.0000		0.0439	0.0318		0.0721	0.0982		0.0024	0.0052	0.0000		0.0071
27-Jun	0.0000		0.0761	0.0516		0.2498	0.1419		0.0106	0.0084	0.0000		0.0153
28-Jun	0.0000		0.1024	0.0309		0.2808	0.1910		0.1619	0.0152	0.0000		0.0494
29-Jun	0.0000		0.1229	0.0992		0.4800	0.2524		0.2648	0.0325	0.0000		0.0882
30-Jun	0.0143		0.0761	0.1200		0.5399	0.3348		0.1461	0.0693	0.0095		0.1505
01-Jul	0.0486		0.4254	0.1949		0.6298	0.4485		1.0866	0.0736	0.0844		0.0999
02-Jul	0.0064		0.1554	0.2477		0.9770	0.5813		1.1104	0.1948	0.3466		0.2328
03-Jul	0.0611		0.6743	0.1793		1.0028	0.7259		0.9793	0.4936	0.2527		0.4803
04-Jul	0.0536		1.1766	0.4551		0.8886	0.9461		0.5641	0.1948	0.3613		0.6467
05-Jul	0.2625		0.9665	0.6872		1.2621	1.2417		0.4134	0.1591	0.2543		0.8617
06-Jul	0.1689		0.5554	0.7412		1.4266	1.5610		1.0625	0.1048	0.2227		1.2028
07-Jul	0.2711		0.4258	0.6268		1.6779	1.7575		0.8121	0.2988	0.2739		1.8822
08-Jul	0.6729		1.0870	0.8255		1.1139	1.9103		0.7013	0.5508	0.6193		1.6451
09-Jul	1.3929		1.6170	0.7563		1.5716	2.1832		0.8371	0.6441	0.3821		1.6784
10-Jul	2.1404		1.2765	1.4195		1.5346	1.4404		0.1213	2.3416	2.4875		2.0910
11-Jul	1.6730		1.3849	1.1002		1.2142	1.1421		0.5698	0.9703	1.5113		2.2349
12-Jul	1.3700		1.2948	1.8769		0.8843	0.9679		1.6193	1.4852	0.6058		2.1663
13-Jul	3.7079		1.2668	2.3838		0.8549	0.9207		1.5418	1.9149	2.6306		1.6776
14-Jul	1.6714		1.3456	2.5983		0.8250	1.0125		1.9724	1.7471	1.6733		2.0988
15-Jul	1.3895		1.5265	1.4983		1.0423	0.4484		2.0822	0.9799	1.8706		1.6402
16-Jul	1.4114		1.7022	1.9757		0.8684	1.2342		1.7922	2.2724	0.8575		1.1701
17-Jul	1.6913		1.5743	1.9501		0.7509	1.0026		1.5067	1.2503	1.2707		0.5820
18-Jul	2.5743		1.2140	1.3914		0.6573	0.7145		0.7244	2.2009	2.0179		0.4118
19-Jul	1.7688		1.4367	1.0959		0.6262	0.5253		0.7031	1.9625	1.7993		0.5103
20-Jul	0.6043		1.2512	1.0605		0.5252	0.6288		1.0008	1.3795	1.4077		0.1989
21-Jul	2.5900		0.7337	1.1259		0.4154	0.3433		0.9310	1.2096	1.1090		0.4655
22-Jul	1.2893		0.8397	0.5966		0.4175	0.1625		0.8559	0.5923	0.6939		0.4825
23-Jul	1.1909		0.5793	0.4506		0.2763	0.2874		0.7043	0.8781	0.8051		0.3852
24-Jul	0.5857		0.8751	1.0866		0.1873	0.1965		0.5601	1.4722	1.7070		0.2634
25-Jul	0.6370		0.5400	0.4195		0.1034	0.2275		0.2995	1.0297	0.9440		0.2218
26-Jul	0.4200		0.3503	0.5186		0.1034	0.1490		0.3750	1.1821	1.1671		0.1877
27-Jul	0.3839		0.2895	0.2503		0.0800	0.2034		0.2618	0.6144	0.5633		0.1365
28-Jul	0.1571		0.2318	0.3803		0.0951	0.1361		0.3304	0.7430	0.8559		0.0828
29-Jul	0.2250		0.2107	0.2183		0.0838	0.0819		0.2922	0.5358	0.4913		0.1429
30-Jul	0.1971		0.1986	0.1542		0.0663	0.1339		0.2427	0.2788	0.3470		0.1677
31-Jul	0.1763		0.1788	0.1368		0.0000	0.1026		0.2098	0.3358	0.3079		0.1271

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DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
01-Aug	0.1543	a	0.1194	0.1778	a	0.0000	0.0699	a	0.1558	0.3637	0.4002	a	0.0943
02-Aug	0.1313		0.0717	0.1513		0.0000	0.0802		0.2188	0.3713	0.3404		0.0593
03-Aug	0.1071		0.1171	0.1147		0.0000	0.1228		0.1826	0.2598	0.2580		0.0235
04-Aug	0.0820		0.0896	0.0315		0.0000	0.0928		0.1242	0.0773	0.0709		0.0720
05-Aug	0.0557		0.0609	0.0688		0.0000	0.0520		0.0422	0.1576	0.1548		0.0367
06-Aug	0.0284		0.0698	0.0654		0.0000	0.0386		0.0323	0.1606	0.1473		0.0436
07-Aug	0.0289		0.1067	0.0143		0.0000	0.0491		0.0438	0.0234	0.0322		0.0381
08-Aug	0.0098		0.0805	0.0873		0.0000	0.0250		0.0893	0.2143	0.1965		0.0647
09-Aug	0.0100		0.0451	0.0445		0.0000	0.0204		0.0341	0.0970	0.1000		0.0198
10-Aug	0.0204		0.0334	0.0955		0.0000	0.0156		0.0116	0.2345	0.2150		0.0067
11-Aug	0.0518		0.0424	0.0716		0.0000	0.0264		0.0353	0.1632	0.1612		0.0341
12-Aug	0.0211		0.0216	0.0624		0.0000	0.0322		0.0120	0.1533	0.1405		0.0694
13-Aug	0.0107		0.0176	0.0318		0.0000	0.0273		0.0609	0.0649	0.0715		0.0141
14-Aug	0.0109		0.0134	0.0323		0.0000	0.0055		0.0124	0.0792	0.0726		0.0215
15-Aug	0.0000		0.0045	0.0109		0.0000	0.0000		0.0126	0.0134	0.0246		0.0146
16-Aug	0.0000		0.0000	0.0000		0.0000	0.0057		0.0128	0.0000	0.0000		0.0222
17-Aug	0.0000		0.0047	0.0339		0.0000	0.0000		0.0130	0.0000	0.0762		0.0376
18-Aug	0.0000		0.0000	0.0172		0.0000	0.0000		0.0000	0.0000	0.0387		0.0306
19-Aug	0.0000		0.0000	0.0524		0.0000	0.0000		0.0268	0.0000	0.1179		0.0233
20-Aug	0.0000		0.0000	0.0414		0.0000	0.0000		0.0000	0.0000	0.0931		0.0236
21-Aug	0.0000		0.0000	0.0240		0.0000	0.0000		0.0138	0.0000	0.0270		0.0240
22-Aug	0.0000		0.0000	0.0304		0.0000	0.0000		0.0000	0.0000	0.0959		0.0243
23-Aug	0.0000		0.0000	0.0185		0.0000	0.0000		0.0000	0.0000	0.0556		0.0165
24-Aug	0.0000		0.0000	0.0125		0.0000	0.0000		0.0000	0.0000	0.0141		0.0000
25-Aug	0.0000		0.0000	0.0064		0.0000	0.0000		0.0000	0.0000	0.0000		0.0085
26-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0086
27-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0147		0.0087
28-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0149		0.0353
29-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0089
	31.53		28.74	30.06		23.98	25.24		27.99	32.66	32.86		27.37
	28.94 = AVERAGE MEAN DATE				23.98 = MINIMUM MEAN DATE				32.86 = MAXIMUM MEAN DATE				

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix C.5. Maximum, average, and minimum daily and cumulative proportions of estimated chinook salmon counts with corresponding tables of mean date and variance components of the time series of estimates, Kogrukluk River, 1988.

DATE	DAILY PROPORTIONS			CUMULATIVE PROPORTIONS			MEAN DATE COMPONENTS			VARIANCE COMPONENTS		
	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums
15-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18-Jun	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0002	0.0000	0.0000	0.0240	0.0041	0.0000
19-Jun	0.0001	0.0001	0.0000	0.0002	0.0001	0.0000	0.0007	0.0003	0.0000	0.0515	0.0310	0.0000
20-Jun	0.0003	0.0001	0.0000	0.0005	0.0001	0.0000	0.0017	0.0004	0.0000	0.0896	0.0367	0.0000
21-Jun	0.0006	0.0002	0.0000	0.0011	0.0003	0.0000	0.0042	0.0011	0.0000	0.1730	0.0729	0.0000
22-Jun	0.0012	0.0003	0.0000	0.0023	0.0006	0.0000	0.0096	0.0028	0.0000	0.3065	0.1514	0.0000
23-Jun	0.0025	0.0007	0.0000	0.0048	0.0013	0.0000	0.0229	0.0065	0.0000	0.5696	0.2860	0.0000
24-Jun	0.0047	0.0012	0.0000	0.0095	0.0025	0.0000	0.0467	0.0117	0.0000	0.9114	0.4199	0.0000
25-Jun	0.0096	0.0021	0.0000	0.0191	0.0047	0.0000	0.1057	0.0236	0.0000	1.6177	0.6893	0.0000
26-Jun	0.0060	0.0024	0.0000	0.0251	0.0071	0.0000	0.0721	0.0290	0.0000	0.8612	0.6923	0.0000
27-Jun	0.0192	0.0047	0.0000	0.0443	0.0118	0.0000	0.2498	0.0615	0.0000	2.3149	1.2020	0.0000
28-Jun	0.0201	0.0066	0.0000	0.0644	0.0184	0.0000	0.2808	0.0924	0.0000	1.9960	1.4726	0.0000
29-Jun	0.0320	0.0099	0.0000	0.0964	0.0283	0.0000	0.4800	0.1489	0.0000	2.5787	1.9283	0.0000
30-Jun	0.0337	0.0101	0.0006	0.1301	0.0385	0.0006	0.5399	0.1623	0.0095	2.1469	1.6975	0.1777
01-Jul	0.0370	0.0202	0.0032	0.1672	0.0587	0.0038	0.6298	0.3435	0.0536	1.8031	2.8796	0.8356
02-Jul	0.0543	0.0238	0.0004	0.2214	0.0825	0.0041	0.9770	0.4280	0.0064	1.9388	2.8448	0.0833
03-Jul	0.0528	0.0284	0.0032	0.2742	0.1108	0.0073	1.0028	0.5388	0.0611	1.3071	2.8005	0.6550
04-Jul	0.0444	0.0294	0.0027	0.3186	0.1402	0.0100	0.8886	0.5874	0.0536	0.7026	2.3461	0.4721
05-Jul	0.0601	0.0323	0.0125	0.3787	0.1725	0.0225	1.2621	0.6787	0.2625	0.5325	2.0363	1.8836
06-Jul	0.0648	0.0356	0.0077	0.4436	0.2081	0.0302	1.4266	0.7829	0.1689	0.2533	1.7127	0.9762
07-Jul	0.0730	0.0388	0.0118	0.5165	0.2469	0.0420	1.6779	0.8918	0.2711	0.0696	1.3669	1.2444
08-Jul	0.0464	0.0423	0.0280	0.5630	0.2891	0.0700	1.1139	1.0140	0.6729	0.0000	1.0300	2.4120
09-Jul	0.0629	0.0492	0.0557	0.6258	0.3383	0.1257	1.5716	1.2292	1.3929	0.0658	0.7623	3.8155
10-Jul	0.0590	0.0635	0.0823	0.6848	0.4018	0.2080	1.5346	1.6503	2.1404	0.2417	0.5477	4.3575
11-Jul	0.0450	0.0486	0.0518	0.7298	0.4503	0.2598	1.2142	1.3112	1.3975	0.4111	0.1823	2.0384
12-Jul	0.0316	0.0487	0.0449	0.7614	0.4990	0.3047	0.8843	1.3634	1.2569	0.5113	0.0428	1.2493
13-Jul	0.0295	0.0647	0.0742	0.7909	0.5638	0.3789	0.8549	1.8777	2.1514	0.7439	0.0003	1.3561
14-Jul	0.0275	0.0553	0.0582	0.8184	0.6191	0.4371	0.8250	1.6605	1.7471	0.9977	0.0625	0.6248
15-Jul	0.0336	0.0447	0.0316	0.8520	0.6638	0.4687	1.0423	1.3864	0.9799	1.6586	0.1902	0.1637
16-Jul	0.0271	0.0461	0.0696	0.8791	0.7100	0.5383	0.8684	1.4760	2.2270	1.7471	0.4326	0.1132
17-Jul	0.0228	0.0390	0.0385	0.9019	0.7489	0.5768	0.7509	1.2865	1.2707	1.8529	0.6434	0.0029
18-Jul	0.0193	0.0389	0.0593	0.9212	0.7879	0.6362	0.6573	1.3229	2.0179	1.9424	0.9972	0.0312
19-Jul	0.0179	0.0331	0.0514	0.9391	0.8210	0.6876	0.6262	1.1587	1.7993	2.1742	1.2167	0.1529
20-Jul	0.0146	0.0249	0.0391	0.9537	0.8458	0.7267	0.5252	0.8952	1.4077	2.1092	1.2403	0.2903
21-Jul	0.0112	0.0268	0.0300	0.9649	0.8726	0.7566	0.4154	0.9915	1.1090	1.9044	1.7419	0.4158
22-Jul	0.0110	0.0173	0.0183	0.9759	0.8900	0.7749	0.4175	0.6589	0.6939	2.1608	1.4241	0.4076
23-Jul	0.0071	0.0158	0.0206	0.9830	0.9058	0.7956	0.2763	0.6175	0.8051	1.5991	1.6031	0.6765
24-Jul	0.0047	0.0193	0.0427	0.9877	0.9251	0.8382	0.1873	0.7704	1.7070	1.2024	2.3571	1.9298
25-Jul	0.0025	0.0120	0.0230	0.9902	0.9370	0.8613	0.1034	0.4914	0.9440	0.7308	1.7438	1.3739
26-Jul	0.0025	0.0118	0.0278	0.9927	0.9488	0.8890	0.1034	0.4948	1.1671	0.7997	2.0102	2.1152
27-Jul	0.0019	0.0072	0.0131	0.9945	0.9560	0.9021	0.0800	0.3092	0.5633	0.6736	1.4222	1.2389
28-Jul	0.0022	0.0076	0.0195	0.9967	0.9636	0.9216	0.0951	0.3347	0.8559	0.8666	1.7259	2.2373
29-Jul	0.0019	0.0056	0.0109	0.9986	0.9693	0.9325	0.0838	0.2535	0.4913	0.8227	1.4536	1.5007
30-Jul	0.0014	0.0043	0.0075	1.0000	0.9736	0.9401	0.0663	0.1985	0.3470	0.6989	1.2561	1.2213
31-Jul	0.0000	0.0037	0.0066	1.0000	0.9773	0.9466	0.0000	0.1750	0.3079	0.0000	1.2148	1.2338

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DATE	DAILY PROPORTIONS			CUMULATIVE PROPORTIONS			MEAN DATE COMPONENTS			VARIANCE COMPONENTS		
	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums
01-Aug	0.0000	0.0036	0.0083	1.0000	0.9808	0.9549	0.0000	0.1706	0.4002	0.0000	1.2915	1.8075
02-Aug	0.0000	0.0032	0.0069	1.0000	0.9841	0.9619	0.0000	0.1582	0.3404	0.0000	1.2999	1.7178
03-Aug	0.0000	0.0026	0.0052	1.0000	0.9867	0.9671	0.0000	0.1317	0.2580	0.0000	1.1689	1.4435
04-Aug	0.0000	0.0014	0.0014	1.0000	0.9881	0.9684	0.0000	0.0711	0.0709	0.0000	0.6788	0.4365
05-Aug	0.0000	0.0013	0.0030	1.0000	0.9895	0.9714	0.0000	0.0699	0.1548	0.0000	0.7146	1.0439
06-Aug	0.0000	0.0012	0.0028	1.0000	0.9907	0.9742	0.0000	0.0651	0.1473	0.0000	0.7113	1.0811
07-Aug	0.0000	0.0007	0.0006	1.0000	0.9914	0.9748	0.0000	0.0374	0.0322	0.0000	0.4349	0.2558
08-Aug	0.0000	0.0016	0.0036	1.0000	0.9929	0.9784	0.0000	0.0853	0.1965	0.0000	1.0531	1.6862
09-Aug	0.0000	0.0007	0.0018	1.0000	0.9937	0.9802	0.0000	0.0412	0.1000	0.0000	0.5388	0.9225
10-Aug	0.0000	0.0012	0.0038	1.0000	0.9949	0.9839	0.0000	0.0703	0.2150	0.0000	0.9709	2.1227
11-Aug	0.0000	0.0011	0.0028	1.0000	0.9960	0.9867	0.0000	0.0651	0.1612	0.0000	0.9483	1.6987
12-Aug	0.0000	0.0010	0.0024	1.0000	0.9970	0.9891	0.0000	0.0569	0.1405	0.0000	0.8722	1.5762
13-Aug	0.0000	0.0006	0.0012	1.0000	0.9975	0.9903	0.0000	0.0332	0.0715	0.0000	0.5337	0.8506
14-Aug	0.0000	0.0005	0.0012	1.0000	0.9980	0.9915	0.0000	0.0275	0.0726	0.0000	0.4642	0.9154
15-Aug	0.0000	0.0001	0.0004	1.0000	0.9981	0.9919	0.0000	0.0090	0.0246	0.0000	0.1580	0.3275
16-Aug	0.0000	0.0001	0.0000	1.0000	0.9982	0.9919	0.0000	0.0045	0.0000	0.0000	0.0834	0.0000
17-Aug	0.0000	0.0003	0.0012	1.0000	0.9985	0.9931	0.0000	0.0184	0.0762	0.0000	0.3530	1.1243
18-Aug	0.0000	0.0001	0.0006	1.0000	0.9986	0.9936	0.0000	0.0096	0.0387	0.0000	0.1922	0.5993
19-Aug	0.0000	0.0004	0.0018	1.0000	0.9990	0.9954	0.0000	0.0245	0.1179	0.0000	0.5096	1.9131
20-Aug	0.0000	0.0003	0.0014	1.0000	0.9993	0.9968	0.0000	0.0176	0.0931	0.0000	0.3798	1.5803
21-Aug	0.0000	0.0001	0.0004	1.0000	0.9994	0.9972	0.0000	0.0099	0.0270	0.0000	0.2213	0.4787
22-Aug	0.0000	0.0002	0.0014	1.0000	0.9997	0.9986	0.0000	0.0167	0.0959	0.0000	0.3893	1.7733
23-Aug	0.0000	0.0001	0.0004	1.0000	0.9998	0.9991	0.0000	0.0101	0.0314	0.0000	0.2424	0.6053
24-Aug	0.0000	0.0000	0.0000	1.0000	0.9998	0.9991	0.0000	0.0030	0.0000	0.0000	0.0737	0.0000
25-Aug	0.0000	0.0000	0.0001	1.0000	0.9999	0.9992	0.0000	0.0016	0.0085	0.0000	0.0424	0.1763
26-Aug	0.0000	0.0000	0.0001	1.0000	0.9999	0.9993	0.0000	0.0010	0.0086	0.0000	0.0254	0.1855
27-Aug	0.0000	0.0000	0.0001	1.0000	0.9999	0.9994	0.0000	0.0026	0.0087	0.0000	0.0713	0.1950
28-Aug	0.0000	0.0001	0.0005	1.0000	1.0000	0.9999	0.0000	0.0056	0.0353	0.0000	0.1577	0.8188
29-Aug	0.0000	0.0000	0.0001	1.0000	1.0000	1.0000	0.0000	0.0010	0.0089	0.0000	0.0289	0.2146
	1.0000	1.0000	1.0000				MEAN OF MAXIMUMS 23.98	MEAN OF AVERAGES 28.94	MEAN OF MINIMUMS 33.28	VAR = S.D. =	64.58 8.04	

Appendix D.1. Sockeye salmon counts expanded for inclusion in the migration timing database, 1976, 1978, 1979, 1981, 1982, 1984, 1985, 1986, and 1988, Kogruluk River, Alaska.

DAILY COUNTS a													
DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
15-Jun		b			b			b				b	
16-Jun													
17-Jun													
18-Jun													
19-Jun									0				
20-Jun									0				
21-Jun						1.0			1				
22-Jun						9.0			0				
23-Jun						19.0			0				
24-Jun						50.0			3				
25-Jun						76.0			2				2.0
26-Jun						91.0	1.0		1				1.0
27-Jun						129.0	9.0		2				8.0
28-Jun			0			222	19.0		3				4.0
29-Jun	1		0			540	50.0	3	10		2		10.0
30-Jun	0		1			705	76.0	3	12		1		32.0
01-Jul	1		11	0		974	91.0	7	7		8		17.0
02-Jul	4		36	1	0	1252	129.0	14	85	2.0	4		12.0
03-Jul	7		55	8	1	940	222.0		124	1.0	10		18.0
04-Jul	2		72	19	0	624	540.0		57	8.0	32		46.0
05-Jul	17		58	14	4	798	705.0		51	4.0	17		75
06-Jul	27		66	9	9	841	974.0	17	281	9	12		150
07-Jul	66		31	75		595	1252.0	11	178	19	18		283
08-Jul	133		101	124		636	1500.0	24	214	50	46		476
09-Jul	204		105	61	12	702	2025	225	159	76	73		505
10-Jul	207		143	65	258	435	1750	67	24	91	180		419
11-Jul	120		116	84	120	647	748	4	62	129	364		507
12-Jul	138		55	184		492	830		295	221	206		365
13-Jul	230		72	315		421	821		173	234	400		239
14-Jul	112	0	126	269		384	575		339	145	500		273
15-Jul	101	2	67	220		469	302		438	178	498	78	276
16-Jul	143	6	63	239		595	686		219	208	314	171	179
17-Jul	102	7	74	174		421	781		192	185	380		109
18-Jul	147	18	48	146		430	371		84	173	175		83
19-Jul	79	149	45	82		386	443		63	259			46
20-Jul	52	198	51	90		386	630		121	176			37
21-Jul	166	153	24	83		595	315		169	207			40
22-Jul	95	135	49	48		526	140		188	127			29
23-Jul	43	111	40	47		365	149		89	115			33
24-Jul	33	150	41	75		345	187		83	227			28
25-Jul	34	95	32	32.0		297	185		38	242			9
26-Jul	5	61	15	18.0		257	141		60	160			9
27-Jul	7	27	8	14.0		287	123		50	164			4
28-Jul	9		15	32.0		242	89		57	194			10
29-Jul	3		11	25.0		189	86		32	157			6
30-Jul	8		8	23.0		141	77		18	131			9
31-Jul	6		7	20.0		110	67		14	93			12

- continued -

DAILY COUNTS a													
DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
01-Aug	2.0		2.0	8.0		80	56		32	108			8.0
02-Aug	3.0		3.0	2.0		67	26		25	57			4.0
03-Aug	3.0		3.0	3.0		65	29		23	43			1
04-Aug	3.0		3.0	3.0		41	23		20	41			3
05-Aug	1.0		1.0	3.0		18	17		8	27			3
06-Aug	6.0		6.0	1.0		27	12		2	27			2
07-Aug	3.0		3.0	6.0		13	8		3	11			1
08-Aug	0.0		0.0	3.0		15	9		3	27			0
09-Aug	1.0		1.0	0.0		23	6		3	8		2	1
10-Aug	1.0		1.0	1.0		20	5		1	7		5	3
11-Aug	0.0		0.0	1.0		8	5		6	1		6	1
12-Aug	0.0		0.0	0.0		12	3		3	13		0	1
13-Aug	0.0		0.0	0.0		10	0		0	2		1	1
14-Aug	1.0		1.0	0.0		10	4		1	1		2	1
15-Aug	0.0		0.0	1.0		5	4		1	1		1	0
16-Aug				0.0		6	1		0	0		1	0
17-Aug						7	0		0	0		3	0
18-Aug						1			0	0		2	2
19-Aug						2			1	0		1	1
20-Aug						2			0	0		1	0
21-Aug						0				0	1	1	1
22-Aug						2				0	2	0	1
23-Aug						0				0	2	1	0
24-Aug						3				0	3	1	0
25-Aug						0				0	0	0	0
26-Aug						1				0	1	1	0
27-Aug						1				0	2	0	1
28-Aug						1				0	1	0	0
29-Aug						2				0	0	0	0

a Data which appear as real numbers with a single decimal place are subjectively estimated. Data which appear in integer form are actual counts.

b Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix D.2. Daily proportions of estimated sockeye salmon counts, Kogrukluk River, 1976-1988.

DAILY PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
2	16-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
3	17-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
4	18-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
5	19-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
6	20-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
7	21-Jun	0.0000		0.0000	0.0000		0.0001	0.0000		0.0002	0.0000	0.0000		0.0000
8	22-Jun	0.0000		0.0000	0.0000		0.0005	0.0000		0.0000	0.0000	0.0000		0.0000
9	23-Jun	0.0000		0.0000	0.0000		0.0011	0.0000		0.0000	0.0000	0.0000		0.0000
10	24-Jun	0.0000		0.0000	0.0000		0.0028	0.0000		0.0007	0.0000	0.0000		0.0000
11	25-Jun	0.0000		0.0000	0.0000		0.0042	0.0000		0.0005	0.0000	0.0000		0.0005
12	26-Jun	0.0000		0.0000	0.0000		0.0050	0.0001		0.0002	0.0000	0.0000		0.0002
13	27-Jun	0.0000		0.0000	0.0000		0.0071	0.0005		0.0005	0.0000	0.0000		0.0018
14	28-Jun	0.0000		0.0000	0.0000		0.0123	0.0011		0.0007	0.0000	0.0000		0.0009
15	29-Jun	0.0004		0.0000	0.0000		0.0299	0.0029		0.0024	0.0000	0.0006		0.0023
16	30-Jun	0.0000		0.0006	0.0000		0.0390	0.0044		0.0029	0.0000	0.0003		0.0073
17	01-Jul	0.0004		0.0066	0.0000		0.0539	0.0053		0.0017	0.0000	0.0025		0.0039
18	02-Jul	0.0017		0.0216	0.0004		0.0693	0.0075		0.0206	0.0005	0.0012		0.0027
19	03-Jul	0.0030		0.0329	0.0030		0.0520	0.0128		0.0300	0.0002	0.0031		0.0041
20	04-Jul	0.0009		0.0431	0.0072		0.0345	0.0312		0.0138	0.0018	0.0098		0.0105
21	05-Jul	0.0073		0.0347	0.0053		0.0442	0.0408		0.0123	0.0009	0.0052		0.0171
22	06-Jul	0.0116		0.0395	0.0034		0.0466	0.0563		0.0680	0.0021	0.0037		0.0341
23	07-Jul	0.0284		0.0186	0.0285		0.0329	0.0724		0.0431	0.0044	0.0055		0.0644
24	08-Jul	0.0572		0.0605	0.0472		0.0352	0.0867		0.0518	0.0115	0.0141		0.1083
25	09-Jul	0.0877		0.0629	0.0232		0.0389	0.1171		0.0385	0.0174	0.0224		0.1149
26	10-Jul	0.0890		0.0856	0.0247		0.0241	0.1012		0.0058	0.0209	0.0554		0.0953
27	11-Jul	0.0516		0.0695	0.0320		0.0358	0.0432		0.0150	0.0296	0.1119		0.1153
28	12-Jul	0.0593		0.0329	0.0700		0.0272	0.0480		0.0714	0.0507	0.0633		0.0830
29	13-Jul	0.0989		0.0431	0.1199		0.0233	0.0475		0.0419	0.0537	0.1230		0.0544
30	14-Jul	0.0482		0.0754	0.1024		0.0213	0.0332		0.0821	0.0333	0.1538		0.0621
31	15-Jul	0.0434		0.0401	0.0837		0.0260	0.0175		0.1061	0.0408	0.1531		0.0628
32	16-Jul	0.0615		0.0377	0.0909		0.0329	0.0397		0.0530	0.0477	0.0966		0.0407
33	17-Jul	0.0439		0.0443	0.0662		0.0233	0.0452		0.0465	0.0424	0.1169		0.0248
34	18-Jul	0.0632		0.0287	0.0556		0.0238	0.0214		0.0203	0.0397	0.0538		0.0189
35	19-Jul	0.0340		0.0269	0.0312		0.0214	0.0256		0.0153	0.0594	0.0000		0.0105
36	20-Jul	0.0224		0.0305	0.0342		0.0214	0.0364		0.0293	0.0404	0.0000		0.0084
37	21-Jul	0.0714		0.0144	0.0316		0.0329	0.0182		0.0409	0.0475	0.0000		0.0091
38	22-Jul	0.0408		0.0293	0.0183		0.0291	0.0081		0.0455	0.0291	0.0000		0.0066
39	23-Jul	0.0185		0.0240	0.0179		0.0202	0.0086		0.0215	0.0264	0.0000		0.0075
40	24-Jul	0.0142		0.0246	0.0285		0.0191	0.0108		0.0201	0.0521	0.0000		0.0064
41	25-Jul	0.0146		0.0192	0.0122		0.0164	0.0107		0.0092	0.0555	0.0000		0.0020
42	26-Jul	0.0021		0.0090	0.0068		0.0142	0.0082		0.0145	0.0367	0.0000		0.0020
43	27-Jul	0.0030		0.0048	0.0053		0.0159	0.0071		0.0121	0.0376	0.0000		0.0009
44	28-Jul	0.0039		0.0090	0.0122		0.0134	0.0051		0.0138	0.0445	0.0000		0.0023
45	29-Jul	0.0013		0.0066	0.0095		0.0105	0.0050		0.0077	0.0360	0.0000		0.0014
46	30-Jul	0.0034		0.0048	0.0088		0.0078	0.0045		0.0044	0.0301	0.0000		0.0020
47	31-Jul	0.0026		0.0042	0.0076		0.0061	0.0039		0.0034	0.0213	0.0000		0.0027

- continued -

DAILY PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
48	01-Aug	0.0009		0.0012	0.0030		0.0044	0.0032		0.0077	0.0248	0.0000		0.0018
49	02-Aug	0.0013		0.0018	0.0008		0.0037	0.0015		0.0061	0.0131	0.0000		0.0009
50	03-Aug	0.0013		0.0018	0.0011		0.0036	0.0017		0.0056	0.0099	0.0000		0.0002
51	04-Aug	0.0013		0.0018	0.0011		0.0023	0.0013		0.0048	0.0094	0.0000		0.0007
52	05-Aug	0.0004		0.0006	0.0011		0.0010	0.0010		0.0019	0.0062	0.0000		0.0007
53	06-Aug	0.0026		0.0036	0.0004		0.0015	0.0007		0.0005	0.0062	0.0000		0.0005
54	07-Aug	0.0013		0.0018	0.0023		0.0007	0.0005		0.0007	0.0025	0.0000		0.0002
55	08-Aug	0.0000		0.0000	0.0011		0.0008	0.0005		0.0007	0.0062	0.0000		0.0000
56	09-Aug	0.0004		0.0006	0.0000		0.0013	0.0003		0.0007	0.0018	0.0000		0.0002
57	10-Aug	0.0004		0.0006	0.0004		0.0011	0.0003		0.0002	0.0016	0.0000		0.0007
58	11-Aug	0.0000		0.0000	0.0004		0.0004	0.0003		0.0015	0.0002	0.0000		0.0002
59	12-Aug	0.0000		0.0000	0.0000		0.0007	0.0002		0.0007	0.0030	0.0000		0.0002
60	13-Aug	0.0000		0.0000	0.0000		0.0006	0.0000		0.0000	0.0005	0.0000		0.0002
61	14-Aug	0.0004		0.0006	0.0000		0.0006	0.0002		0.0002	0.0002	0.0000		0.0002
62	15-Aug	0.0000		0.0000	0.0004		0.0003	0.0002		0.0002	0.0002	0.0000		0.0000
63	16-Aug	0.0000		0.0000	0.0000		0.0003	0.0001		0.0000	0.0000	0.0000		0.0000
64	17-Aug	0.0000		0.0000	0.0000		0.0004	0.0000		0.0000	0.0000	0.0000		0.0000
65	18-Aug	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0000		0.0005
66	19-Aug	0.0000		0.0000	0.0000		0.0001	0.0000		0.0002	0.0000	0.0000		0.0002
67	20-Aug	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0000		0.0000
68	21-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0003		0.0002
69	22-Aug	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0006		0.0002
70	23-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0006		0.0000
71	24-Aug	0.0000		0.0000	0.0000		0.0002	0.0000		0.0000	0.0000	0.0009		0.0000
72	25-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
73	26-Aug	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0003		0.0000
74	27-Aug	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0006		0.0002
75	28-Aug	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0003		0.0000
76	29-Aug	0.0000		0.0000	0.0000		0.0001	0.0000		0.0000	0.0000	0.0000		0.0000
TOTAL		1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix D.3. Cumulative proportions of estimated sockeye salmon counts, Kogrukluk River, 1976-1988.

CUMULATIVE PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
2	16-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
3	17-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
4	18-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
5	19-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
6	20-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
7	21-Jun	0.0000		0.0000	0.0000		0.0001	0.0000		0.0002	0.0000	0.0000		0.0000
8	22-Jun	0.0000		0.0000	0.0000		0.0006	0.0000		0.0002	0.0000	0.0000		0.0000
9	23-Jun	0.0000		0.0000	0.0000		0.0016	0.0000		0.0002	0.0000	0.0000		0.0000
10	24-Jun	0.0000		0.0000	0.0000		0.0044	0.0000		0.0010	0.0000	0.0000		0.0000
11	25-Jun	0.0000		0.0000	0.0000		0.0086	0.0000		0.0015	0.0000	0.0000		0.0005
12	26-Jun	0.0000		0.0000	0.0000		0.0136	0.0001		0.0017	0.0000	0.0000		0.0007
13	27-Jun	0.0000		0.0000	0.0000		0.0208	0.0006		0.0022	0.0000	0.0000		0.0025
14	28-Jun	0.0000		0.0000	0.0000		0.0330	0.0017		0.0029	0.0000	0.0000		0.0034
15	29-Jun	0.0004		0.0000	0.0000		0.0629	0.0046		0.0053	0.0000	0.0006		0.0057
16	30-Jun	0.0004		0.0006	0.0000		0.1020	0.0090		0.0082	0.0000	0.0009		0.0130
17	01-Jul	0.0009		0.0072	0.0000		0.1559	0.0142		0.0099	0.0000	0.0034		0.0168
18	02-Jul	0.0026		0.0287	0.0004		0.2252	0.0217		0.0305	0.0005	0.0046		0.0196
19	03-Jul	0.0056		0.0617	0.0034		0.2772	0.0345		0.0605	0.0007	0.0077		0.0237
20	04-Jul	0.0064		0.1048	0.0107		0.3117	0.0657		0.0743	0.0025	0.0175		0.0341
21	05-Jul	0.0138		0.1395	0.0160		0.3559	0.1065		0.0867	0.0034	0.0228		0.0512
22	06-Jul	0.0254		0.1790	0.0194		0.4025	0.1628		0.1547	0.0055	0.0264		0.0853
23	07-Jul	0.0537		0.1976	0.0479		0.4354	0.2352		0.1978	0.0099	0.0320		0.1496
24	08-Jul	0.1109		0.2581	0.0951		0.4706	0.3219		0.2496	0.0213	0.0461		0.2579
25	09-Jul	0.1986		0.3210	0.1183		0.5095	0.4390		0.2881	0.0388	0.0686		0.3728
26	10-Jul	0.2876		0.4066	0.1431		0.5335	0.5402		0.2939	0.0596	0.1239		0.4680
27	11-Jul	0.3392		0.4760	0.1750		0.5694	0.5834		0.3090	0.0892	0.2359		0.5834
28	12-Jul	0.3985		0.5090	0.2451		0.5966	0.6314		0.3804	0.1399	0.2992		0.6664
29	13-Jul	0.4974		0.5521	0.3649		0.6199	0.6788		0.4223	0.1936	0.4222		0.7207
30	14-Jul	0.5456		0.6275	0.4673		0.6411	0.7121		0.5044	0.2269	0.5760		0.7828
31	15-Jul	0.5890		0.6677	0.5510		0.6671	0.7295		0.6104	0.2677	0.7291		0.8456
32	16-Jul	0.6505		0.7054	0.6419		0.7000	0.7692		0.6634	0.3154	0.8256		0.8863
33	17-Jul	0.6943		0.7497	0.7081		0.7233	0.8144		0.7099	0.3579	0.9425		0.9111
34	18-Jul	0.7575		0.7784	0.7637		0.7471	0.8358		0.7303	0.3976	0.9963		0.9300
35	19-Jul	0.7915		0.8054	0.7949		0.7685	0.8614		0.7455	0.4570	0.9963		0.9404
36	20-Jul	0.8138		0.8359	0.8291		0.7899	0.8978		0.7748	0.4974	0.9963		0.9488
37	21-Jul	0.8852		0.8503	0.8607		0.8228	0.9161		0.8157	0.5448	0.9963		0.9579
38	22-Jul	0.9261		0.8796	0.8790		0.8519	0.9241		0.8613	0.5740	0.9963		0.9645
39	23-Jul	0.9445		0.9036	0.8969		0.8721	0.9328		0.8828	0.6004	0.9963		0.9720
40	24-Jul	0.9587		0.9281	0.9254		0.8912	0.9436		0.9029	0.6524	0.9963		0.9784
41	25-Jul	0.9733		0.9473	0.9376		0.9077	0.9543		0.9121	0.7080	0.9963		0.9804
42	26-Jul	0.9755		0.9563	0.9444		0.9219	0.9624		0.9266	0.7447	0.9963		0.9825
43	27-Jul	0.9785		0.9611	0.9498		0.9378	0.9695		0.9387	0.7823	0.9963		0.9834
44	28-Jul	0.9824		0.9701	0.9619		0.9512	0.9747		0.9525	0.8268	0.9963		0.9857
45	29-Jul	0.9837		0.9766	0.9715		0.9616	0.9796		0.9603	0.8628	0.9963		0.9870
46	30-Jul	0.9871		0.9814	0.9802		0.9694	0.9841		0.9646	0.8929	0.9963		0.9891
47	31-Jul	0.9897		0.9856	0.9878		0.9755	0.9880		0.9680	0.9142	0.9963		0.9918

- continued -

t	DATE	CUMULATIVE PROPORTIONS												
		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
48	01-Aug	0.9905		0.9868	0.9909		0.9800	0.9912		0.9758	0.9390	0.9963		0.9936
49	02-Aug	0.9918		0.9886	0.9916		0.9837	0.9927		0.9818	0.9521	0.9963		0.9945
50	03-Aug	0.9931		0.9904	0.9928		0.9873	0.9944		0.9874	0.9619	0.9963		0.9948
51	04-Aug	0.9944		0.9922	0.9939		0.9895	0.9957		0.9923	0.9713	0.9963		0.9955
52	05-Aug	0.9948		0.9928	0.9951		0.9905	0.9967		0.9942	0.9775	0.9963		0.9961
53	06-Aug	0.9974		0.9964	0.9954		0.9920	0.9974		0.9947	0.9837	0.9963		0.9966
54	07-Aug	0.9987		0.9982	0.9977		0.9927	0.9979		0.9954	0.9862	0.9963		0.9968
55	08-Aug	0.9987		0.9982	0.9989		0.9936	0.9984		0.9961	0.9924	0.9963		0.9968
56	09-Aug	0.9991		0.9988	0.9989		0.9949	0.9987		0.9969	0.9943	0.9963		0.9970
57	10-Aug	0.9996		0.9994	0.9992		0.9960	0.9990		0.9971	0.9959	0.9963		0.9977
58	11-Aug	0.9996		0.9994	0.9996		0.9964	0.9993		0.9985	0.9961	0.9963		0.9980
59	12-Aug	0.9996		0.9994	0.9996		0.9971	0.9995		0.9993	0.9991	0.9963		0.9982
60	13-Aug	0.9996		0.9994	0.9996		0.9976	0.9995		0.9993	0.9995	0.9963		0.9984
61	14-Aug	1.0000		1.0000	0.9996		0.9982	0.9997		0.9995	0.9998	0.9963		0.9986
62	15-Aug	1.0000		1.0000	1.0000		0.9985	0.9999		0.9998	1.0000	0.9963		0.9986
63	16-Aug	1.0000		1.0000	1.0000		0.9988	1.0000		0.9998	1.0000	0.9963		0.9986
64	17-Aug	1.0000		1.0000	1.0000		0.9992	1.0000		0.9998	1.0000	0.9963		0.9986
65	18-Aug	1.0000		1.0000	1.0000		0.9992	1.0000		0.9998	1.0000	0.9963		0.9991
66	19-Aug	1.0000		1.0000	1.0000		0.9993	1.0000		1.0000	1.0000	0.9963		0.9993
67	20-Aug	1.0000		1.0000	1.0000		0.9994	1.0000		1.0000	1.0000	0.9963		0.9993
68	21-Aug	1.0000		1.0000	1.0000		0.9994	1.0000		1.0000	1.0000	0.9966		0.9995
69	22-Aug	1.0000		1.0000	1.0000		0.9996	1.0000		1.0000	1.0000	0.9972		0.9998
70	23-Aug	1.0000		1.0000	1.0000		0.9996	1.0000		1.0000	1.0000	0.9978		0.9998
71	24-Aug	1.0000		1.0000	1.0000		0.9997	1.0000		1.0000	1.0000	0.9988		0.9998
72	25-Aug	1.0000		1.0000	1.0000		0.9997	1.0000		1.0000	1.0000	0.9988		0.9998
73	26-Aug	1.0000		1.0000	1.0000		0.9998	1.0000		1.0000	1.0000	0.9991		0.9998
74	27-Aug	1.0000		1.0000	1.0000		0.9998	1.0000		1.0000	1.0000	0.9997		1.0000
75	28-Aug	1.0000		1.0000	1.0000		0.9999	1.0000		1.0000	1.0000	1.0000		1.0000
76	29-Aug	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000
MAXIMUM		1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand

Appendix D.4. Mean date statistics of estimated sockeye salmon counts, Kogrukluk River, 1976-1988.

DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
16-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
17-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
18-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
19-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
20-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
21-Jun	0.0000		0.0000	0.0000		0.0004	0.0000		0.0017	0.0000	0.0000		0.0000
22-Jun	0.0000		0.0000	0.0000		0.0040	0.0000		0.0000	0.0000	0.0000		0.0000
23-Jun	0.0000		0.0000	0.0000		0.0095	0.0000		0.0000	0.0000	0.0000		0.0000
24-Jun	0.0000		0.0000	0.0000		0.0277	0.0000		0.0073	0.0000	0.0000		0.0000
25-Jun	0.0000		0.0000	0.0000		0.0463	0.0000		0.0053	0.0000	0.0000		0.0050
26-Jun	0.0000		0.0000	0.0000		0.0604	0.0007		0.0029	0.0000	0.0000		0.0027
27-Jun	0.0000		0.0000	0.0000		0.0928	0.0068		0.0063	0.0000	0.0000		0.0237
28-Jun	0.0000		0.0000	0.0000		0.1720	0.0154		0.0102	0.0000	0.0000		0.0127
29-Jun	0.0064		0.0000	0.0000		0.4484	0.0434		0.0363	0.0000	0.0092		0.0341
30-Jun	0.0000		0.0096	0.0000		0.6244	0.0703		0.0465	0.0000	0.0049		0.1164
01-Jul	0.0073		0.1120	0.0000		0.9165	0.0894		0.0288	0.0000	0.0418		0.0657
02-Jul	0.0310		0.3880	0.0068		1.2474	0.1342		0.3705	0.0083	0.0221		0.0491
03-Jul	0.0572		0.6257	0.0578		0.9886	0.2439		0.5705	0.0044	0.0584		0.0778
04-Jul	0.0172		0.8623	0.1446		0.6908	0.6244		0.2760	0.0367	0.1968		0.2092
05-Jul	0.1535		0.7293	0.1119		0.9276	0.8559		0.2593	0.0193	0.1098		0.3582
06-Jul	0.2554		0.8695	0.0753		1.0241	1.2388		1.4969	0.0454	0.0812		0.7505
07-Jul	0.6526		0.4269	0.6564		0.7575	1.6648		0.9913	0.1003	0.1273		1.4803
08-Jul	1.3723		1.4515	1.1324		0.8449	2.0813		1.2436	0.2753	0.3395		2.5981
09-Jul	2.1926		1.5719	0.5803		0.9714	2.9268		0.9625	0.4359	0.5612		2.8713
10-Jul	2.3138		2.2263	0.6431		0.6260	2.6305		0.1511	0.5428	1.4391		2.4776
11-Jul	1.3929		1.8754	0.8630		0.9670	1.1676		0.4053	0.7990	3.0221		3.1133
12-Jul	1.6612		0.9222	1.9604		0.7625	1.3436		2.0000	1.4196	1.7737		2.3243
13-Jul	2.8676		1.2503	3.4760		0.6758	1.3765		1.2148	1.5568	3.5670		1.5763
14-Jul	1.4445		2.2635	3.0708		0.6377	0.9973		2.4625	0.9979	4.6125		1.8626
15-Jul	1.3461		1.2437	2.5951		0.8048	0.5412		3.2877	1.2659	4.7472		1.9459
16-Jul	1.9673		1.2072	2.9102		1.0539	1.2691		1.6969	1.5270	3.0898		1.3027
17-Jul	1.4471		1.4623	2.1849		0.7690	1.4900		1.5341	1.4006	3.8561		0.8181
18-Jul	2.1488		0.9772	1.8889		0.8093	0.7293		0.6915	1.3494	1.8296		0.6418
19-Jul	1.1887		0.9431	1.0921		0.7478	0.8964		0.5339	2.0796	0.0000		0.3662
20-Jul	0.8048		1.0994	1.2329		0.7692	1.3112		1.0547	1.4535	0.0000		0.3029
21-Jul	2.6406		0.5317	1.1686		1.2186	0.6738		1.5140	1.7571	0.0000		0.3366
22-Jul	1.5520		1.1150	0.6941		1.1064	0.3076		1.7298	1.1071	0.0000		0.2506
23-Jul	0.7210		0.9341	0.6975		0.7879	0.3360		0.8404	1.0289	0.0000		0.2927
24-Jul	0.5675		0.9820	1.1416		0.7639	0.4324		0.8039	2.0830	0.0000		0.2547
25-Jul	0.5993		0.7856	0.4992		0.6740	0.4385		0.3772	2.2762	0.0000		0.0839
26-Jul	0.0903		0.3772	0.2877		0.5975	0.3424		0.6102	1.5416	0.0000		0.0860
27-Jul	0.1294		0.2060	0.2291		0.6831	0.3058		0.5206	1.6178	0.0000		0.0391
28-Jul	0.1702		0.3952	0.5358		0.5894	0.2264		0.6073	1.9582	0.0000		0.1001
29-Jul	0.0580		0.2964	0.4281		0.4708	0.2237		0.3487	1.6208	0.0000		0.0614
30-Jul	0.1582		0.2204	0.4026		0.3590	0.2048		0.2005	1.3824	0.0000		0.0942
31-Jul	0.1212		0.1970	0.3577		0.2862	0.1821		0.1593	1.0028	0.0000		0.1283

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DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
01-Aug	0.0413		0.0575	0.1461		0.2126	0.1554		0.3719	1.1893	0.0000		0.0873
02-Aug	0.0632		0.0880	0.0373		0.1817	0.0737		0.2966	0.6407	0.0000		0.0446
03-Aug	0.0645		0.0898	0.0571		0.1799	0.0838		0.2785	0.4932	0.0000		0.0114
04-Aug	0.0658		0.0916	0.0582		0.1157	0.0678		0.2470	0.4797	0.0000		0.0348
05-Aug	0.0224		0.0311	0.0594		0.0518	0.0511		0.1007	0.3221	0.0000		0.0355
06-Aug	0.1367		0.1904	0.0202		0.0792	0.0368		0.0257	0.3283	0.0000		0.0241
07-Aug	0.0696		0.0970	0.1233		0.0389	0.0250		0.0392	0.1363	0.0000		0.0123
08-Aug	0.0000		0.0000	0.0628		0.0457	0.0286		0.0400	0.3407	0.0000		0.0000
09-Aug	0.0241		0.0335	0.0000		0.0713	0.0194		0.0407	0.1028	0.0000		0.0127
10-Aug	0.0245		0.0341	0.0217		0.0631	0.0165		0.0138	0.0915	0.0000		0.0389
11-Aug	0.0000		0.0000	0.0221		0.0257	0.0168		0.0843	0.0133	0.0000		0.0132
12-Aug	0.0000		0.0000	0.0000		0.0392	0.0102		0.0429	0.1760	0.0000		0.0134
13-Aug	0.0000		0.0000	0.0000		0.0332	0.0000		0.0000	0.0275	0.0000		0.0136
14-Aug	0.0262		0.0365	0.0000		0.0338	0.0141		0.0148	0.0140	0.0000		0.0139
15-Aug	0.0000		0.0000	0.0236		0.0172	0.0143		0.0150	0.0142	0.0000		0.0000
16-Aug	0.0000		0.0000	0.0000		0.0209	0.0036		0.0000	0.0000	0.0000		0.0000
17-Aug	0.0000		0.0000	0.0000		0.0248	0.0000		0.0000	0.0000	0.0000		0.0000
18-Aug	0.0000		0.0000	0.0000		0.0036	0.0000		0.0000	0.0000	0.0000		0.0296
19-Aug	0.0000		0.0000	0.0000		0.0073	0.0000		0.0160	0.0000	0.0000		0.0150
20-Aug	0.0000		0.0000	0.0000		0.0074	0.0000		0.0000	0.0000	0.0000		0.0000
21-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0209		0.0155
22-Aug	0.0000		0.0000	0.0000		0.0076	0.0000		0.0000	0.0000	0.0424		0.0157
23-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0431		0.0000
24-Aug	0.0000		0.0000	0.0000		0.0118	0.0000		0.0000	0.0000	0.0655		0.0000
25-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
26-Aug	0.0000		0.0000	0.0000		0.0040	0.0000		0.0000	0.0000	0.0224		0.0000
27-Aug	0.0000		0.0000	0.0000		0.0041	0.0000		0.0000	0.0000	0.0455		0.0168
28-Aug	0.0000		0.0000	0.0000		0.0042	0.0000		0.0000	0.0000	0.0231		0.0000
29-Aug	0.0000		0.0000	0.0000		0.0084	0.0000		0.0000	0.0000	0.0000		0.0000
	30.67		29.31	31.76		27.31	28.04		30.69	37.06	29.75		27.56
	30.24 = AVERAGE MEAN DATE			27.31 = MINIMUM MEAN DATE				37.06 = MAXIMUM MEAN DATE					

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix D.5. Maximum, average, and minimum daily and cumulative proportions of estimated sockeye salmon counts with corresponding tables of mean date and variance components of the time series of estimates, Kogrukluk River, 1988.

DATE	DAILY PROPORTIONS			CUMULATIVE PROPORTIONS			MEAN DATE COMPONENTS			VARIANCE COMPONENTS		
	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums
15-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21-Jun	0.0002	0.0000	0.0000	0.0002	0.0000	0.0000	0.0017	0.0002	0.0000	0.0760	0.0179	0.0000
22-Jun	0.0003	0.0001	0.0000	0.0006	0.0001	0.0000	0.0025	0.0004	0.0000	0.0870	0.0274	0.0000
23-Jun	0.0011	0.0001	0.0000	0.0016	0.0002	0.0000	0.0095	0.0011	0.0000	0.2598	0.0527	0.0000
24-Jun	0.0028	0.0004	0.0000	0.0044	0.0006	0.0000	0.0277	0.0039	0.0000	0.5995	0.1590	0.0000
25-Jun	0.0042	0.0006	0.0000	0.0086	0.0012	0.0000	0.0463	0.0063	0.0000	0.7916	0.2116	0.0000
26-Jun	0.0050	0.0006	0.0000	0.0136	0.0018	0.0000	0.0604	0.0074	0.0000	0.8147	0.2057	0.0000
27-Jun	0.0071	0.0011	0.0000	0.0208	0.0029	0.0000	0.0928	0.0144	0.0000	0.9804	0.3290	0.0000
28-Jun	0.0123	0.0017	0.0000	0.0330	0.0046	0.0000	0.1720	0.0234	0.0000	1.4116	0.4402	0.0000
29-Jun	0.0299	0.0043	0.0000	0.0629	0.0088	0.0000	0.4484	0.0642	0.0000	2.8227	0.9940	0.0000
30-Jun	0.0390	0.0061	0.0000	0.1020	0.0149	0.0000	0.6244	0.0969	0.0000	2.9658	1.2279	0.0000
01-Jul	0.0539	0.0082	0.0000	0.1559	0.0231	0.0000	0.9165	0.1402	0.0000	3.2114	1.4452	0.0000
02-Jul	0.0693	0.0139	0.0004	0.2252	0.0371	0.0004	1.2474	0.2508	0.0068	3.1275	2.0874	0.1389
03-Jul	0.0520	0.0157	0.0003	0.2772	0.0528	0.0007	0.9886	0.2982	0.0058	1.7011	1.9828	0.1009
04-Jul	0.0345	0.0170	0.0018	0.3117	0.0698	0.0025	0.6908	0.3398	0.0367	0.7688	1.7811	0.5371
05-Jul	0.0442	0.0186	0.0009	0.3559	0.0884	0.0034	0.9276	0.3916	0.0193	0.6105	1.5919	0.2381
06-Jul	0.0466	0.0295	0.0021	0.4025	0.1179	0.0055	1.0241	0.6486	0.0454	0.3439	2.0011	0.4712
07-Jul	0.0329	0.0331	0.0044	0.4354	0.1510	0.0099	0.7575	0.7619	0.1003	0.0972	1.7360	0.8674
08-Jul	0.0352	0.0525	0.0115	0.4706	0.2035	0.0213	0.8449	1.2599	0.2753	0.0181	2.0433	1.9705
09-Jul	0.0389	0.0581	0.0174	0.5095	0.2616	0.0388	0.9714	1.4526	0.4359	0.0031	1.5948	2.5556
10-Jul	0.0307	0.0558	0.0209	0.5402	0.3174	0.0596	0.7978	1.4500	0.5428	0.0504	1.0021	2.5754
11-Jul	0.0432	0.0560	0.0296	0.5834	0.3734	0.0892	1.1676	1.5117	0.7990	0.2252	0.5874	3.0230
12-Jul	0.0830	0.0562	0.0507	0.6664	0.4296	0.1399	2.3231	1.5742	1.4196	0.8938	0.2818	4.2048
13-Jul	0.0544	0.0673	0.0537	0.7207	0.4969	0.1936	1.5763	1.9512	1.5568	0.9967	0.1033	3.5281
14-Jul	0.0621	0.0680	0.0333	0.7828	0.5648	0.2269	1.8626	2.0388	0.9979	1.7323	0.0039	1.6801
15-Jul	0.0628	0.0637	0.0408	0.8456	0.6286	0.2677	1.9459	1.9753	1.2659	2.4773	0.0369	1.5229
16-Jul	0.0407	0.0556	0.0477	0.8863	0.6842	0.3154	1.3027	1.7804	1.5270	2.1588	0.1726	1.2445
17-Jul	0.0562	0.0504	0.0424	0.9425	0.7346	0.3579	1.8550	1.6625	1.4006	3.8557	0.3840	0.7158
18-Jul	0.0538	0.0362	0.0397	0.9963	0.7707	0.3976	1.8296	1.2295	1.3494	4.6365	0.5115	0.3831
19-Jul	0.0000	0.0249	0.0594	0.9963	0.7957	0.4570	0.0000	0.8720	2.0796	0.0000	0.5647	0.2637
20-Jul	0.0000	0.0248	0.0404	0.9963	0.8204	0.4974	0.0000	0.8921	1.4535	0.0000	0.8224	0.0495
21-Jul	0.0000	0.0296	0.0475	0.9963	0.8500	0.5448	0.0000	1.0934	1.7571	0.0000	1.3509	0.0005
22-Jul	0.0000	0.0230	0.0291	0.9963	0.8730	0.5740	0.0000	0.8736	1.1071	0.0000	1.3848	0.0232
23-Jul	0.0000	0.0161	0.0264	0.9963	0.8890	0.6004	0.0000	0.6265	1.0289	0.0000	1.2330	0.0946
24-Jul	0.0000	0.0195	0.0521	0.9963	0.9086	0.6524	0.0000	0.7810	2.0830	0.0000	1.8603	0.4359
25-Jul	0.0000	0.0155	0.0555	0.9963	0.9241	0.7080	0.0000	0.6371	2.2762	0.0000	1.7995	0.8414
26-Jul	0.0000	0.0104	0.0367	0.9963	0.9345	0.7447	0.0000	0.4370	1.5416	0.0000	1.4391	0.8788
27-Jul	0.0000	0.0096	0.0376	0.9963	0.9442	0.7823	0.0000	0.4145	1.6178	0.0000	1.5699	1.3066
28-Jul	0.0000	0.0116	0.0445	0.9963	0.9557	0.8268	0.0000	0.5092	1.9582	0.0000	2.1914	2.1147
29-Jul	0.0000	0.0087	0.0360	0.9963	0.9644	0.8628	0.0000	0.3898	1.6208	0.0000	1.8872	2.2439
30-Jul	0.0000	0.0073	0.0301	0.9963	0.9717	0.8929	0.0000	0.3358	1.3824	0.0000	1.8133	2.3768
31-Jul	0.0000	0.0058	0.0213	0.9963	0.9774	0.9142	0.0000	0.2705	1.0028	0.0000	1.6169	2.0882

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DATE	DAILY PROPORTIONS			CUMULATIVE PROPORTIONS			MEAN DATE COMPONENTS			VARIANCE COMPONENTS		
	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums
01-Aug	0.0000	0.0052	0.0248	0.9963	0.9827	0.9390	0.0000	0.2513	1.1893	0.0000	1.6513	2.9400
02-Aug	0.0000	0.0032	0.0131	0.9963	0.9859	0.9521	0.0000	0.1584	0.6407	0.0000	1.1380	1.8496
03-Aug	0.0000	0.0028	0.0099	0.9963	0.9887	0.9619	0.0000	0.1398	0.4932	0.0000	1.0918	1.6398
04-Aug	0.0000	0.0025	0.0094	0.9963	0.9912	0.9713	0.0000	0.1290	0.4797	0.0000	1.0899	1.8155
05-Aug	0.0004	0.0014	0.0062	0.9967	0.9927	0.9775	0.0205	0.0749	0.3221	0.2938	0.6821	1.3739
06-Aug	0.0007	0.0018	0.0062	0.9974	0.9944	0.9837	0.0379	0.0935	0.3283	0.5726	0.9138	1.5646
07-Aug	0.0013	0.0011	0.0025	0.9987	0.9956	0.9862	0.0696	0.0602	0.1363	1.1059	0.6291	0.7202
08-Aug	0.0001	0.0010	0.0062	0.9989	0.9966	0.9924	0.0082	0.0575	0.3407	0.1359	0.6412	1.9831
09-Aug	0.0003	0.0006	0.0018	0.9991	0.9972	0.9943	0.0158	0.0338	0.1028	0.2757	0.4010	0.6551
10-Aug	0.0004	0.0006	0.0016	0.9996	0.9978	0.9959	0.0245	0.0338	0.0915	0.4480	0.4246	0.6355
11-Aug	0.0000	0.0003	0.0002	0.9996	0.9981	0.9961	0.0029	0.0195	0.0133	0.0547	0.2588	0.1001
12-Aug	0.0000	0.0005	0.0002	0.9996	0.9987	0.9963	0.0000	0.0313	0.0124	0.0000	0.4388	0.1006
13-Aug	0.0000	0.0001	0.0000	0.9996	0.9988	0.9963	0.0000	0.0083	0.0000	0.0000	0.1220	0.0000
14-Aug	0.0004	0.0003	0.0000	1.0000	0.9991	0.9963	0.0232	0.0170	0.0000	0.5009	0.2642	0.0000
15-Aug	0.0000	0.0002	0.0000	1.0000	0.9992	0.9963	0.0000	0.0094	0.0000	0.0000	0.1524	0.0000
16-Aug	0.0000	0.0000	0.0000	1.0000	0.9993	0.9963	0.0000	0.0027	0.0000	0.0000	0.0465	0.0000
17-Aug	0.0000	0.0000	0.0000	1.0000	0.9993	0.9963	0.0000	0.0028	0.0000	0.0000	0.0491	0.0000
18-Aug	0.0000	0.0001	0.0000	1.0000	0.9994	0.9963	0.0000	0.0037	0.0000	0.0000	0.0685	0.0000
19-Aug	0.0000	0.0001	0.0000	1.0000	0.9994	0.9963	0.0000	0.0043	0.0000	0.0000	0.0825	0.0000
20-Aug	0.0000	0.0000	0.0000	1.0000	0.9995	0.9963	0.0000	0.0008	0.0000	0.0000	0.0166	0.0000
21-Aug	0.0000	0.0001	0.0003	1.0000	0.9995	0.9966	0.0000	0.0040	0.0209	0.0000	0.0848	0.2935
22-Aug	0.0000	0.0001	0.0006	1.0000	0.9996	0.9972	0.0000	0.0073	0.0424	0.0000	0.1591	0.6256
23-Aug	0.0000	0.0001	0.0006	1.0000	0.9997	0.9978	0.0000	0.0048	0.0431	0.0000	0.1080	0.6654
24-Aug	0.0000	0.0001	0.0009	1.0000	0.9998	0.9988	0.0000	0.0086	0.0655	0.0000	0.2010	1.0597
25-Aug	0.0000	0.0000	0.0000	1.0000	0.9998	0.9988	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26-Aug	0.0000	0.0000	0.0003	1.0000	0.9998	0.9991	0.0000	0.0029	0.0224	0.0000	0.0737	0.3962
27-Aug	0.0000	0.0001	0.0006	1.0000	0.9999	0.9997	0.0000	0.0074	0.0455	0.0000	0.1910	0.8371
28-Aug	0.0000	0.0000	0.0002	1.0000	1.0000	0.9999	0.0000	0.0030	0.0148	0.0000	0.0808	0.2826
29-Aug	0.0000	0.0000	0.0001	1.0000	1.0000	1.0000	0.0000	0.0009	0.0084	0.0000	0.0258	0.1675
	1.0000	1.0000	1.0000				MEAN OF MAXIMUMS	MEAN OF AVERAGES	MEAN OF MINIMUMS	VAR =	53.63	
							24.72	30.24	37.11	S.D. =	7.32	

Appendix E.1. Coho salmon counts expanded for inclusion in the migration timing database, Kogrukluk River, 1976-1988.

DAILY COUNTS a													
DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
23-Jul	b	b	b	b	b								0
24-Jul									1				1
25-Jul									4				0
26-Jul									2	1.0			0
27-Jul									1	4.0			0
28-Jul									1	2.0			0
29-Jul									4	1.0			0
30-Jul							0.0		2	1.0	1.0		0
31-Jul							2.0		3	4.0	0.0		0
01-Aug							5.0		11	6	1.0		0
02-Aug							5		14	4	0.0		0
03-Aug						0	6		19	7	2.0	1.0	0
04-Aug						2	15		32	7	5.0	0.0	0
05-Aug						5	17		18	14	3.0	1.0	0
06-Aug						5	16	0.0	53	8	8.0	0.0	4
07-Aug						2	42	2.0	99	18	18.0	2.0	6
08-Aug						10	36	5.0	44	49	29.0	5.0	11
09-Aug						26	55	5.0	119	13	35.0	3	15
10-Aug						20	42	6.0	52	94	39.0	8	25
11-Aug						22	106	15.0	222	59	61.0	18	38
12-Aug						62	91	17.0	115	118	86.0	29	80
13-Aug						62	58	18	224	68	140.0	35	86
14-Aug						133	78	35	147	82	243.0	39	46
15-Aug						154	195	56	179	84	199.0	61	25
16-Aug						141	56	18	144	224.0	298.0	86	105
17-Aug						109	511	26	86	147.0	412.0	140	157
18-Aug						110	465	46	1258	179.0	286.0	243	258
19-Aug						296	371	24	995	144.0	318.0	199	202
20-Aug						314	283	11	537	86.0	527.0	298	290
21-Aug						187	409	3	321	500.0	629	412	352
22-Aug						185	142	67	1412	450.0	767	286	383
23-Aug						197	228	152	1730	300.0	1476	318	323
24-Aug						255	647	100	1190	321	1887	527	389
25-Aug						416	868	35	2031	231	1364	658	258
26-Aug						318	804	6	2036	200	1223	776	898
27-Aug						369	946	27	731	473	1091	762	378
28-Aug						267	820	270	584	890	1255	814	618
29-Aug						144	632	49	370	817	823	1151	553
30-Aug						302	1488	28	688	494	656	1141	770
31-Aug						322	1680	161	907	859	614	1824	494
01-Sep						296	1537	580	613	1380	420	1008	330
02-Sep						328	1905	27	821	1271	529	1773	369
03-Sep						296	1980	469	713	566	634	1160	238
04-Sep						612	1285	363	853	557	339	2950	237
05-Sep						535	1781	100	787	631	323	1053	171
06-Sep						655	5013	556	742	530	234	962	170
07-Sep						506	3219	205	343	853	453	556.0	153
08-Sep						521	2165	111	1107	818	445.0	205.0	445
09-Sep						567	1460	151	1081	589	179.0	111.0	179
10-Sep						335	1226	858	47	339	434.0	151.0	434
11-Sep						283	921	360	830	155	966.0	858.0	966
12-Sep						246	722	15	363	308	436.0	360.0	436

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DAILY COUNTS a													
DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
13-Sep						239	748	175	224	233	257.0	15.0	257
14-Sep						194	508	887	357	259	152.0	175.0	152
15-Sep						157	424.0	134	37	241	112.0	21	112
16-Sep						168	405.0	151	175.0	140	121.0	61	121
17-Sep						132	269.0	424	887.0	113	186.0	123	186
18-Sep						149	189.0	405	134.0	84	405.0	75	405.0
19-Sep						118	125.0	269	151.0	138	269.0	151	269.0
20-Sep						138	257.0	189	424.0	90	189.0	253	189.0
21-Sep						103	114.0	125	138.0	60	125.0	110	125.0
22-Sep						114	135.0	257	90.0	38	257.0	53	257.0
23-Sep						78	47.0	114	60.0	9	114.0	175	114.0
24-Sep						44	45.0	135	38.0	14.0	135.0	113.0	135.0
25-Sep						30	43.0	47	9.0	20.0	47.0	84.0	47.0
26-Sep						29	29.0	45	14.0	19.0	45.0	138.0	45.0
27-Sep						26	26.0	43	20.0	18.0	43.0	90.0	43.0
28-Sep						13	13.0	29.0	19.0	15.0	29.0	60.0	29.0
29-Sep						14	14.0	26.0	18.0	7.0	26.0	38.0	26.0
30-Sep						20	20.0	13.0	15.0		13.0	9.0	13.0
01-Oct						19	19.0	14.0	7.0		14.0	14.0	14.0
02-Oct						18	18.0	20.0	26.0		20.0	20.0	20.0
03-Oct						15	15.0	19.0	13.0		19.0	19.0	19.0
04-Oct						7	7.0	18.0	14.0		18.0	18.0	18.0
05-Oct						10		15.0	20.0		15.0	15.0	15.0
06-Oct						5		7.0	19.0		7.0	7.0	7.0

a Data which appear as real numbers with a single decimal place are subjectively estimated. Data which appear in integer form are actual counts.

b Coho salmon were not monitored by the project prior to 1981.

Appendix E.2. Daily proportions of estimated coho salmon counts, Kogrukluk River, 1976-1988.

		DAILY PROPORTIONS												
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	23-Jul	a	a	a	a	a	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	24-Jul						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
3	25-Jul						0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000
4	26-Jul						0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000
5	27-Jul						0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000
6	28-Jul						0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000
7	29-Jul						0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000
8	30-Jul						0.0000	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0000
9	31-Jul						0.0000	0.0001	0.0000	0.0001	0.0002	0.0000	0.0000	0.0000
10	01-Aug						0.0000	0.0001	0.0000	0.0004	0.0004	0.0000	0.0000	0.0000
11	02-Aug						0.0000	0.0001	0.0000	0.0005	0.0002	0.0000	0.0000	0.0000
12	03-Aug						0.0000	0.0002	0.0000	0.0007	0.0004	0.0001	0.0000	0.0000
13	04-Aug						0.0002	0.0004	0.0000	0.0012	0.0004	0.0002	0.0000	0.0000
14	05-Aug						0.0004	0.0004	0.0000	0.0007	0.0009	0.0001	0.0000	0.0000
15	06-Aug						0.0004	0.0004	0.0000	0.0019	0.0005	0.0004	0.0000	0.0003
16	07-Aug						0.0002	0.0011	0.0002	0.0036	0.0011	0.0008	0.0001	0.0004
17	08-Aug						0.0009	0.0010	0.0006	0.0016	0.0030	0.0013	0.0002	0.0008
18	09-Aug						0.0023	0.0015	0.0006	0.0043	0.0008	0.0016	0.0001	0.0011
19	10-Aug						0.0017	0.0011	0.0007	0.0019	0.0057	0.0017	0.0004	0.0019
20	11-Aug						0.0019	0.0028	0.0018	0.0080	0.0036	0.0027	0.0008	0.0028
21	12-Aug						0.0054	0.0024	0.0020	0.0042	0.0072	0.0038	0.0013	0.0059
22	13-Aug						0.0054	0.0015	0.0021	0.0081	0.0041	0.0062	0.0015	0.0064
23	14-Aug						0.0116	0.0021	0.0041	0.0053	0.0050	0.0108	0.0017	0.0034
24	15-Aug						0.0134	0.0052	0.0066	0.0065	0.0051	0.0088	0.0027	0.0019
25	16-Aug						0.0123	0.0015	0.0021	0.0052	0.0136	0.0132	0.0038	0.0078
26	17-Aug						0.0095	0.0135	0.0030	0.0031	0.0089	0.0183	0.0061	0.0116
27	18-Aug						0.0096	0.0123	0.0054	0.0456	0.0109	0.0127	0.0106	0.0191
28	19-Aug						0.0258	0.0098	0.0028	0.0361	0.0088	0.0141	0.0087	0.0150
29	20-Aug						0.0274	0.0075	0.0013	0.0195	0.0052	0.0234	0.0131	0.0215
30	21-Aug						0.0163	0.0108	0.0004	0.0116	0.0304	0.0279	0.0181	0.0261
31	22-Aug						0.0162	0.0038	0.0078	0.0512	0.0273	0.0341	0.0125	0.0283
32	23-Aug						0.0172	0.0060	0.0178	0.0627	0.0182	0.0656	0.0139	0.0239
33	24-Aug						0.0223	0.0171	0.0117	0.0431	0.0195	0.0838	0.0231	0.0288
34	25-Aug						0.0363	0.0230	0.0041	0.0736	0.0140	0.0606	0.0288	0.0191
35	26-Aug						0.0278	0.0213	0.0007	0.0738	0.0122	0.0543	0.0340	0.0665
36	27-Aug						0.0322	0.0250	0.0032	0.0265	0.0287	0.0485	0.0334	0.0280
37	28-Aug						0.0233	0.0217	0.0316	0.0212	0.0541	0.0558	0.0357	0.0457
38	29-Aug						0.0126	0.0167	0.0057	0.0134	0.0497	0.0366	0.0504	0.0409
39	30-Aug						0.0264	0.0394	0.0033	0.0249	0.0300	0.0291	0.0500	0.0570
40	31-Aug						0.0281	0.0444	0.0189	0.0329	0.0522	0.0273	0.0799	0.0366
41	01-Sep						0.0258	0.0407	0.0679	0.0222	0.0839	0.0187	0.0442	0.0244
42	02-Sep						0.0286	0.0504	0.0032	0.0298	0.0772	0.0235	0.0777	0.0273
43	03-Sep						0.0258	0.0524	0.0549	0.0258	0.0344	0.0282	0.0508	0.0176
44	04-Sep						0.0534	0.0340	0.0425	0.0309	0.0339	0.0151	0.1293	0.0175
45	05-Sep						0.0467	0.0471	0.0117	0.0285	0.0383	0.0144	0.0461	0.0127
46	06-Sep						0.0572	0.1326	0.0651	0.0269	0.0322	0.0104	0.0422	0.0126
47	07-Sep						0.0442	0.0852	0.0240	0.0124	0.0518	0.0201	0.0244	0.0113
48	08-Sep						0.0455	0.0573	0.0130	0.0401	0.0497	0.0198	0.0090	0.0329
49	09-Sep						0.0495	0.0386	0.0177	0.0392	0.0358	0.0080	0.0049	0.0132
50	10-Sep						0.0292	0.0324	0.1005	0.0017	0.0206	0.0193	0.0066	0.0321
51	11-Sep						0.0247	0.0244	0.0422	0.0301	0.0094	0.0429	0.0376	0.0715
52	12-Sep						0.0215	0.0191	0.0018	0.0132	0.0187	0.0194	0.0158	0.0323

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		DAILY PROPORTIONS												
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
53	13-Sep						0.0209	0.0198	0.0205	0.0081	0.0142	0.0114	0.0007	0.0190
54	14-Sep						0.0169	0.0134	0.1039	0.0129	0.0157	0.0068	0.0077	0.0113
55	15-Sep						0.0137	0.0112	0.0157	0.0013	0.0146	0.0050	0.0009	0.0083
56	16-Sep						0.0147	0.0107	0.0177	0.0063	0.0085	0.0054	0.0027	0.0090
57	17-Sep						0.0115	0.0071	0.0497	0.0321	0.0069	0.0083	0.0054	0.0138
58	18-Sep						0.0130	0.0050	0.0474	0.0049	0.0051	0.0180	0.0033	0.0300
59	19-Sep						0.0103	0.0033	0.0315	0.0055	0.0084	0.0120	0.0066	0.0199
60	20-Sep						0.0120	0.0068	0.0221	0.0154	0.0055	0.0084	0.0111	0.0140
61	21-Sep						0.0090	0.0030	0.0146	0.0050	0.0036	0.0056	0.0048	0.0093
62	22-Sep						0.0100	0.0036	0.0301	0.0033	0.0023	0.0114	0.0023	0.0190
63	23-Sep						0.0068	0.0012	0.0134	0.0022	0.0005	0.0051	0.0077	0.0084
64	24-Sep						0.0038	0.0012	0.0158	0.0014	0.0009	0.0060	0.0050	0.0100
65	25-Sep						0.0026	0.0011	0.0055	0.0003	0.0012	0.0021	0.0037	0.0035
66	26-Sep						0.0025	0.0008	0.0053	0.0005	0.0012	0.0020	0.0060	0.0033
67	27-Sep						0.0023	0.0007	0.0050	0.0007	0.0011	0.0019	0.0039	0.0032
68	28-Sep						0.0011	0.0003	0.0034	0.0007	0.0009	0.0013	0.0026	0.0021
69	29-Sep						0.0012	0.0004	0.0030	0.0007	0.0004	0.0012	0.0017	0.0019
70	30-Sep						0.0017	0.0005	0.0015	0.0005	0.0000	0.0006	0.0004	0.0010
71	01-Oct						0.0017	0.0005	0.0016	0.0003	0.0000	0.0006	0.0006	0.0010
72	02-Oct						0.0016	0.0005	0.0023	0.0009	0.0000	0.0009	0.0009	0.0015
73	03-Oct						0.0013	0.0004	0.0022	0.0005	0.0000	0.0008	0.0008	0.0014
74	04-Oct						0.0006	0.0002	0.0021	0.0005	0.0000	0.0008	0.0008	0.0013
75	05-Oct						0.0009	0.0000	0.0018	0.0007	0.0000	0.0007	0.0007	0.0011
76	06-Oct						0.0004	0.0000	0.0008	0.0007	0.0000	0.0003	0.0003	0.0005
TOTAL							1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

a Coho salmon were not monitored by the project prior to 1981.

Appendix E.3. Cumulative proportions of estimated coho salmon counts, Kogrukluk River, 1976-1988.

		CUMULATIVE PROPORTIONS												
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	23-Jul	a	a	a	a	a	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	24-Jul						0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001
3	25-Jul						0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0001
4	26-Jul						0.0000	0.0000	0.0000	0.0003	0.0001	0.0000	0.0000	0.0001
5	27-Jul						0.0000	0.0000	0.0000	0.0003	0.0003	0.0000	0.0000	0.0001
6	28-Jul						0.0000	0.0000	0.0000	0.0003	0.0004	0.0000	0.0000	0.0001
7	29-Jul						0.0000	0.0000	0.0000	0.0005	0.0005	0.0000	0.0000	0.0001
8	30-Jul						0.0000	0.0000	0.0000	0.0005	0.0005	0.0000	0.0000	0.0001
9	31-Jul						0.0000	0.0001	0.0000	0.0007	0.0008	0.0000	0.0000	0.0001
10	01-Aug						0.0000	0.0002	0.0000	0.0011	0.0012	0.0001	0.0000	0.0001
11	02-Aug						0.0000	0.0003	0.0000	0.0016	0.0014	0.0001	0.0000	0.0001
12	03-Aug						0.0000	0.0005	0.0000	0.0022	0.0018	0.0002	0.0000	0.0001
13	04-Aug						0.0002	0.0009	0.0000	0.0034	0.0022	0.0004	0.0000	0.0001
14	05-Aug						0.0006	0.0013	0.0000	0.0041	0.0031	0.0005	0.0001	0.0001
15	06-Aug						0.0010	0.0017	0.0000	0.0060	0.0036	0.0009	0.0001	0.0004
16	07-Aug						0.0012	0.0029	0.0002	0.0096	0.0047	0.0017	0.0002	0.0008
17	08-Aug						0.0021	0.0038	0.0008	0.0112	0.0077	0.0030	0.0004	0.0016
18	09-Aug						0.0044	0.0053	0.0014	0.0155	0.0084	0.0045	0.0005	0.0027
19	10-Aug						0.0061	0.0064	0.0021	0.0174	0.0142	0.0063	0.0009	0.0046
20	11-Aug						0.0080	0.0092	0.0039	0.0254	0.0177	0.0090	0.0017	0.0074
21	12-Aug						0.0134	0.0116	0.0059	0.0296	0.0249	0.0128	0.0029	0.0133
22	13-Aug						0.0189	0.0131	0.0080	0.0377	0.0291	0.0190	0.0045	0.0197
23	14-Aug						0.0305	0.0152	0.0121	0.0430	0.0340	0.0298	0.0062	0.0231
24	15-Aug						0.0439	0.0203	0.0186	0.0495	0.0391	0.0387	0.0089	0.0249
25	16-Aug						0.0562	0.0218	0.0207	0.0547	0.0528	0.0519	0.0126	0.0327
26	17-Aug						0.0657	0.0353	0.0238	0.0578	0.0617	0.0702	0.0188	0.0443
27	18-Aug						0.0753	0.0476	0.0292	0.1034	0.0726	0.0829	0.0294	0.0634
28	19-Aug						0.1012	0.0575	0.0320	0.1395	0.0813	0.0970	0.0381	0.0784
29	20-Aug						0.1286	0.0649	0.0333	0.1589	0.0865	0.1205	0.0512	0.0998
30	21-Aug						0.1449	0.0758	0.0336	0.1706	0.1169	0.1484	0.0692	0.1259
31	22-Aug						0.1611	0.0795	0.0415	0.2217	0.1443	0.1825	0.0818	0.1542
32	23-Aug						0.1783	0.0855	0.0593	0.2844	0.1625	0.2481	0.0957	0.1782
33	24-Aug						0.2005	0.1027	0.0710	0.3276	0.1820	0.3319	0.1188	0.2069
34	25-Aug						0.2368	0.1256	0.0751	0.4012	0.1961	0.3925	0.1476	0.2260
35	26-Aug						0.2646	0.1469	0.0758	0.4749	0.2082	0.4469	0.1816	0.2925
36	27-Aug						0.2968	0.1719	0.0789	0.5014	0.2370	0.4953	0.2150	0.3205
37	28-Aug						0.3201	0.1936	0.1106	0.5226	0.2911	0.5511	0.2507	0.3662
38	29-Aug						0.3327	0.2103	0.1163	0.5360	0.3407	0.5877	0.3011	0.4071
39	30-Aug						0.3591	0.2497	0.1196	0.5609	0.3707	0.6168	0.3511	0.4641
40	31-Aug						0.3872	0.2941	0.1384	0.5938	0.4229	0.6441	0.4311	0.5007
41	01-Sep						0.4130	0.3348	0.2064	0.6160	0.5068	0.6628	0.4752	0.5251
42	02-Sep						0.4416	0.3852	0.2095	0.6458	0.5841	0.6863	0.5529	0.5524
43	03-Sep						0.4675	0.4376	0.2645	0.6716	0.6185	0.7144	0.6037	0.5701
44	04-Sep						0.5209	0.4715	0.3070	0.7025	0.6523	0.7295	0.7330	0.5876
45	05-Sep						0.5676	0.5187	0.3187	0.7310	0.6907	0.7438	0.7792	0.6003
46	06-Sep						0.6248	0.6513	0.3838	0.7579	0.7229	0.7542	0.8213	0.6128
47	07-Sep						0.6690	0.7364	0.4078	0.7704	0.7747	0.7744	0.8457	0.6242
48	08-Sep						0.7144	0.7937	0.4208	0.8105	0.8244	0.7941	0.8547	0.6571
49	09-Sep						0.7639	0.8323	0.4385	0.8496	0.8602	0.8021	0.8595	0.6703
50	10-Sep						0.7932	0.8647	0.5390	0.8513	0.8808	0.8214	0.8661	0.7025
51	11-Sep						0.8179	0.8891	0.5812	0.8814	0.8902	0.8643	0.9037	0.7740
52	12-Sep						0.8394	0.9082	0.5829	0.8946	0.9090	0.8837	0.9195	0.8062

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t	DATE	CUMULATIVE PROPORTIONS												
		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
53	13-Sep						0.8602	0.9280	0.6034	0.9027	0.9231	0.8951	0.9202	0.8253
54	14-Sep						0.8772	0.9414	0.7073	0.9156	0.9389	0.9018	0.9278	0.8365
55	15-Sep						0.8909	0.9526	0.7230	0.9170	0.9535	0.9068	0.9287	0.8448
56	16-Sep						0.9055	0.9634	0.7407	0.9233	0.9620	0.9122	0.9314	0.8537
57	17-Sep						0.9171	0.9705	0.7903	0.9555	0.9689	0.9205	0.9368	0.8675
58	18-Sep						0.9301	0.9755	0.8378	0.9603	0.9740	0.9385	0.9401	0.8975
59	19-Sep						0.9404	0.9788	0.8693	0.9658	0.9824	0.9504	0.9467	0.9174
60	20-Sep						0.9524	0.9856	0.8914	0.9812	0.9878	0.9588	0.9578	0.9314
61	21-Sep						0.9614	0.9886	0.9061	0.9862	0.9915	0.9644	0.9626	0.9406
62	22-Sep						0.9714	0.9922	0.9362	0.9894	0.9938	0.9758	0.9649	0.9597
63	23-Sep						0.9782	0.9934	0.9495	0.9916	0.9943	0.9808	0.9726	0.9681
64	24-Sep						0.9820	0.9946	0.9653	0.9930	0.9952	0.9868	0.9776	0.9781
65	25-Sep						0.9846	0.9957	0.9708	0.9933	0.9964	0.9889	0.9812	0.9816
66	26-Sep						0.9872	0.9965	0.9761	0.9938	0.9976	0.9909	0.9873	0.9849
67	27-Sep						0.9894	0.9972	0.9811	0.9945	0.9987	0.9928	0.9912	0.9881
68	28-Sep						0.9906	0.9975	0.9845	0.9952	0.9996	0.9941	0.9939	0.9902
69	29-Sep						0.9918	0.9979	0.9876	0.9959	1.0000	0.9953	0.9955	0.9922
70	30-Sep						0.9935	0.9984	0.9891	0.9964	1.0000	0.9959	0.9959	0.9931
71	01-Oct						0.9952	0.9989	0.9907	0.9967	1.0000	0.9965	0.9965	0.9942
72	02-Oct						0.9968	0.9994	0.9931	0.9976	1.0000	0.9974	0.9974	0.9956
73	03-Oct						0.9981	0.9998	0.9953	0.9981	1.0000	0.9982	0.9982	0.9970
74	04-Oct						0.9987	1.0000	0.9974	0.9986	1.0000	0.9990	0.9990	0.9984
75	05-Oct						0.9996	1.0000	0.9992	0.9993	1.0000	0.9997	0.9997	0.9995
76	06-Oct						1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
	MAXIMUM						1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

a Coho salmon were not monitored by the project prior to 1981.

Appendix E.4. Mean date statistics of estimated coho salmon counts, Kogrukluk River, 1976-1988.

DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
23-Jul	a	a	a	a	a	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24-Jul						0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001
25-Jul						0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000
26-Jul						0.0000	0.0000	0.0000	0.0003	0.0002	0.0000	0.0000	0.0000
27-Jul						0.0000	0.0000	0.0000	0.0002	0.0012	0.0000	0.0000	0.0000
28-Jul						0.0000	0.0000	0.0000	0.0002	0.0007	0.0000	0.0000	0.0000
29-Jul						0.0000	0.0000	0.0000	0.0010	0.0004	0.0000	0.0000	0.0000
30-Jul						0.0000	0.0000	0.0000	0.0006	0.0005	0.0004	0.0000	0.0000
31-Jul						0.0000	0.0005	0.0000	0.0010	0.0022	0.0000	0.0000	0.0000
01-Aug						0.0000	0.0013	0.0000	0.0040	0.0036	0.0004	0.0000	0.0000
02-Aug						0.0000	0.0015	0.0000	0.0056	0.0027	0.0000	0.0000	0.0000
03-Aug						0.0000	0.0019	0.0000	0.0083	0.0051	0.0011	0.0005	0.0000
04-Aug						0.0023	0.0052	0.0000	0.0151	0.0055	0.0029	0.0000	0.0000
05-Aug						0.0061	0.0063	0.0000	0.0091	0.0119	0.0019	0.0006	0.0000
06-Aug						0.0065	0.0063	0.0000	0.0288	0.0073	0.0053	0.0000	0.0044
07-Aug						0.0028	0.0178	0.0037	0.0574	0.0175	0.0128	0.0014	0.0071
08-Aug						0.0148	0.0162	0.0100	0.0271	0.0506	0.0219	0.0037	0.0138
09-Aug						0.0409	0.0262	0.0105	0.0776	0.0142	0.0280	0.0024	0.0200
10-Aug						0.0332	0.0211	0.0134	0.0358	0.1085	0.0329	0.0067	0.0352
11-Aug						0.0384	0.0561	0.0351	0.1609	0.0717	0.0542	0.0158	0.0563
12-Aug						0.1137	0.0506	0.0418	0.0875	0.1506	0.0802	0.0267	0.1243
13-Aug						0.1191	0.0338	0.0464	0.1786	0.0909	0.1369	0.0337	0.1400
14-Aug						0.2670	0.0475	0.0943	0.1225	0.1146	0.2483	0.0393	0.0783
15-Aug						0.3227	0.1238	0.1574	0.1557	0.1225	0.2122	0.0642	0.0444
16-Aug						0.3077	0.0370	0.0527	0.1305	0.3403	0.3310	0.0942	0.1943
17-Aug						0.2474	0.3515	0.0792	0.0810	0.2323	0.4760	0.1595	0.3021
18-Aug						0.2593	0.3321	0.1455	1.2309	0.2937	0.3431	0.2875	0.5156
19-Aug						0.7235	0.2748	0.0787	1.0096	0.2450	0.3956	0.2442	0.4186
20-Aug						0.7949	0.2171	0.0374	0.5643	0.1516	0.6791	0.3787	0.6225
21-Aug						0.4897	0.3246	0.0105	0.3490	0.9116	0.8384	0.5416	0.7816
22-Aug						0.5007	0.1164	0.2433	1.5862	0.8478	1.0565	0.3885	0.8788
23-Aug						0.5503	0.1930	0.5697	2.0062	0.5834	2.0986	0.4459	0.7650
24-Aug						0.7346	0.5648	0.3865	1.4231	0.6438	2.7669	0.7621	0.9501
25-Aug						1.2347	0.7807	0.1394	2.5024	0.4773	2.0606	0.9803	0.6492
26-Aug						0.9716	0.7444	0.0246	2.5824	0.4254	1.9019	1.1901	2.3263
27-Aug						1.1597	0.9009	0.1138	0.9537	1.0349	1.7451	1.2021	1.0072
28-Aug						0.8624	0.8026	1.1701	0.7830	2.0013	2.0632	1.3197	1.6924
29-Aug						0.4777	0.6353	0.2181	0.5095	1.8868	1.3896	1.9166	1.5553
30-Aug						1.0282	1.5351	0.1279	0.9724	1.1709	1.1368	1.9499	2.2226
31-Aug						1.1244	1.7776	0.7543	1.3147	2.0882	1.0913	3.1971	1.4625
01-Sep						1.0595	1.6670	2.7852	0.9108	3.4387	0.7651	1.8110	1.0014
02-Sep						1.2026	2.1165	0.1328	1.2496	3.2443	0.9872	3.2630	1.1471
03-Sep						1.1111	2.2522	2.3620	1.1110	1.4792	1.2113	2.1857	0.7575
04-Sep						2.3508	1.4956	1.8707	1.3601	1.4895	0.6628	5.6877	0.7718
05-Sep						2.1017	2.1201	0.5271	1.2834	1.7257	0.6458	2.0764	0.5695
06-Sep						2.6303	6.1000	2.9955	1.2369	1.4817	0.4783	1.9391	0.5788
07-Sep						2.0761	4.0021	1.1285	0.5842	2.4366	0.9460	1.1451	0.5322
08-Sep						2.1832	2.7490	0.6240	1.9256	2.3863	0.9491	0.4312	1.5809
09-Sep						2.4254	1.8924	0.8666	1.9195	1.7540	0.3897	0.2383	0.6492
10-Sep						1.4622	1.6216	5.0246	0.0852	1.0301	0.9642	0.3308	1.6061
11-Sep						1.2600	1.2425	2.1504	1.5340	0.4804	2.1890	1.9174	3.6464
12-Sep						1.1167	0.9931	0.0914	0.6840	0.9734	1.0074	0.8203	1.6780

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DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
13-Sep						1.1058	1.0487	1.0863	0.4302	0.7505	0.6052	0.0348	1.0081
14-Sep						0.9145	0.7257	5.6100	0.6986	0.8500	0.3647	0.4141	0.6075
15-Sep						0.7538	0.6169	0.8632	0.0737	0.8056	0.2737	0.0506	0.4559
16-Sep						0.8213	0.6000	0.9904	0.3551	0.4765	0.3011	0.1497	0.5015
17-Sep						0.6568	0.4056	2.8306	1.8322	0.3915	0.4711	0.3072	0.7847
18-Sep						0.7544	0.2900	2.7512	0.2816	0.2961	1.0437	0.1906	1.7386
19-Sep						0.6078	0.1951	1.8589	0.3228	0.4948	0.7052	0.3904	1.1747
20-Sep						0.7228	0.4079	1.3282	0.9219	0.3282	0.5039	0.6652	0.8393
21-Sep						0.5485	0.1840	0.8931	0.3051	0.2224	0.3388	0.2940	0.5644
22-Sep						0.6170	0.2214	1.8662	0.2022	0.1432	0.7080	0.1440	1.1793
23-Sep						0.4290	0.0783	0.8412	0.1370	0.0345	0.3191	0.4831	0.5316
24-Sep						0.2458	0.0762	1.0119	0.0881	0.0545	0.3839	0.3169	0.6395
25-Sep						0.1702	0.0739	0.3578	0.0212	0.0790	0.1357	0.2393	0.2261
26-Sep						0.1671	0.0506	0.3479	0.0335	0.0762	0.1320	0.3991	0.2198
27-Sep						0.1521	0.0461	0.3374	0.0486	0.0733	0.1280	0.2642	0.2132
28-Sep						0.0772	0.0234	0.2310	0.0468	0.0620	0.0876	0.1788	0.1460
29-Sep						0.0843	0.0256	0.2101	0.0450	0.0294	0.0797	0.1149	0.1328
30-Sep						0.1222	0.0370	0.1066	0.0381	0.0000	0.0404	0.0276	0.0674
01-Oct						0.1178	0.0357	0.1164	0.0180	0.0000	0.0442	0.0436	0.0736
02-Oct						0.1131	0.0343	0.1687	0.0678	0.0000	0.0640	0.0631	0.1066
03-Oct						0.0956	0.0290	0.1625	0.0344	0.0000	0.0616	0.0608	0.1027
04-Oct						0.0452	0.0137	0.1560	0.0375	0.0000	0.0592	0.0584	0.0986
05-Oct						0.0655	0.0000	0.1318	0.0544	0.0000	0.0500	0.0493	0.0833
06-Oct						0.0332	0.0000	0.0623	0.0523	0.0000	0.0236	0.0233	0.0394
						42.84	43.47	49.44	39.01	41.20	39.33	42.06	42.92
						42.54 = AVERAGE MEAN DATE			39.01 = MINIMUM MEAN DATE			49.44 = MAXIMUM MEAN DATE	

a Coho salmon were not monitored by the project prior to 1981.

Appendix E.5. Maximum, average, and minimum daily and cumulative proportions of estimated coho salmon counts with corresponding tables of mean date and variance components of the time series of estimates, Kogrukluk River, 1988.

DATE	DAILY PROPORTIONS			CUMULATIVE PROPORTIONS			MEAN DATE COMPONENTS			VARIANCE COMPONENTS		
	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums
23-Jul	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24-Jul	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0964	0.0226	0.0000
25-Jul	0.0001	0.0000	0.0000	0.0002	0.0000	0.0000	0.0003	0.0001	0.0000	0.1320	0.0283	0.0000
26-Jul	0.0001	0.0000	0.0000	0.0003	0.0000	0.0000	0.0003	0.0001	0.0000	0.0843	0.0247	0.0000
27-Jul	0.0001	0.0000	0.0000	0.0003	0.0001	0.0000	0.0003	0.0002	0.0000	0.0550	0.0492	0.0000
28-Jul	0.0001	0.0000	0.0000	0.0004	0.0001	0.0000	0.0007	0.0001	0.0000	0.1252	0.0263	0.0000
29-Jul	0.0001	0.0000	0.0000	0.0005	0.0001	0.0000	0.0004	0.0002	0.0000	0.0588	0.0325	0.0000
30-Jul	0.0001	0.0000	0.0000	0.0005	0.0002	0.0000	0.0005	0.0002	0.0000	0.0550	0.0265	0.0000
31-Jul	0.0002	0.0001	0.0000	0.0008	0.0002	0.0000	0.0022	0.0005	0.0000	0.2058	0.0569	0.0000
01-Aug	0.0004	0.0001	0.0000	0.0012	0.0003	0.0000	0.0036	0.0012	0.0000	0.2878	0.1244	0.0000
02-Aug	0.0004	0.0001	0.0000	0.0016	0.0004	0.0000	0.0044	0.0012	0.0000	0.2962	0.1097	0.0000
03-Aug	0.0007	0.0002	0.0000	0.0022	0.0006	0.0000	0.0083	0.0021	0.0000	0.4688	0.1638	0.0000
04-Aug	0.0012	0.0003	0.0000	0.0034	0.0009	0.0000	0.0151	0.0039	0.0000	0.7303	0.2594	0.0000
05-Aug	0.0007	0.0003	0.0000	0.0041	0.0012	0.0000	0.0091	0.0045	0.0000	0.3787	0.2612	0.0000
06-Aug	0.0019	0.0005	0.0000	0.0060	0.0017	0.0000	0.0288	0.0073	0.0000	1.0244	0.3713	0.0000
07-Aug	0.0036	0.0009	0.0002	0.0096	0.0027	0.0002	0.0574	0.0151	0.0028	1.7514	0.6630	0.1965
08-Aug	0.0016	0.0012	0.0002	0.0112	0.0038	0.0004	0.0271	0.0198	0.0037	0.7095	0.7584	0.2312
09-Aug	0.0043	0.0015	0.0001	0.0155	0.0053	0.0005	0.0776	0.0275	0.0024	1.7413	0.9187	0.1303
10-Aug	0.0019	0.0019	0.0004	0.0174	0.0072	0.0009	0.0358	0.0358	0.0067	0.6871	1.0449	0.3257
11-Aug	0.0080	0.0031	0.0008	0.0254	0.0103	0.0017	0.1609	0.0611	0.0158	2.6340	1.5504	0.6856
12-Aug	0.0042	0.0040	0.0013	0.0296	0.0143	0.0029	0.0875	0.0844	0.0267	1.2178	1.8645	1.0309
13-Aug	0.0081	0.0044	0.0015	0.0377	0.0187	0.0045	0.1786	0.0974	0.0337	2.1027	1.8673	1.1584
14-Aug	0.0053	0.0055	0.0017	0.0430	0.0242	0.0062	0.1225	0.1265	0.0393	1.2138	2.0987	1.1985
15-Aug	0.0065	0.0063	0.0027	0.0495	0.0305	0.0089	0.1557	0.1504	0.0642	1.2886	2.1523	1.7357
16-Aug	0.0067	0.0074	0.0038	0.0562	0.0379	0.0126	0.1680	0.1860	0.0942	1.1520	2.2873	2.2588
17-Aug	0.0140	0.0093	0.0061	0.0702	0.0472	0.0188	0.3636	0.2411	0.1595	2.0455	2.5355	3.3829
18-Aug	0.0332	0.0158	0.0104	0.1034	0.0630	0.0292	0.8970	0.4260	0.2810	4.0892	3.8074	5.2615
19-Aug	0.0361	0.0151	0.0028	0.1395	0.0781	0.0320	1.0096	0.4238	0.0787	3.6743	3.1974	1.2973
20-Aug	0.0195	0.0149	0.0013	0.1589	0.0930	0.0333	0.5643	0.4307	0.0374	1.6096	2.7208	0.5405
21-Aug	0.0116	0.0177	0.0004	0.1706	0.1107	0.0336	0.3490	0.5309	0.0105	0.7622	2.7806	0.1334
22-Aug	0.0512	0.0227	0.0078	0.2217	0.1333	0.0415	1.5862	0.7023	0.2433	2.5755	3.0143	2.6807
23-Aug	0.0627	0.0282	0.0178	0.2844	0.1615	0.0593	2.0062	0.9015	0.5697	2.3287	3.1269	5.4413
24-Aug	0.0475	0.0312	0.0117	0.3319	0.1927	0.0710	1.5667	1.0290	0.3865	1.2322	2.8350	3.1820
25-Aug	0.0692	0.0324	0.0041	0.4012	0.2251	0.0751	2.3544	1.1031	0.1394	1.1610	2.3635	0.9827
26-Aug	0.0738	0.0363	0.0007	0.4749	0.2614	0.0758	2.5824	1.2708	0.0246	0.7066	2.0616	0.1474
27-Aug	0.0265	0.0282	0.0032	0.5014	0.2896	0.0789	0.9537	1.0147	0.1138	0.1162	1.2037	0.5749
28-Aug	0.0497	0.0361	0.0316	0.5511	0.3257	0.1106	1.8376	1.3369	1.1701	0.0595	1.1070	4.9274
29-Aug	0.0366	0.0283	0.0057	0.5877	0.3540	0.1163	1.3896	1.0736	0.2181	0.0003	0.5811	0.7567
30-Aug	0.0291	0.0325	0.0033	0.6168	0.3865	0.1196	1.1368	1.2680	0.1279	0.0239	0.4063	0.3604
31-Aug	0.0273	0.0400	0.0189	0.6441	0.4265	0.1384	1.0913	1.6013	0.7543	0.0990	0.2573	1.6956
01-Sep	0.0187	0.0410	0.0079	0.6628	0.4675	0.2064	0.7651	1.6798	2.7852	0.1575	0.0966	4.8880
02-Sep	0.0235	0.0397	0.0032	0.6863	0.5072	0.2095	0.9872	1.6679	0.1328	0.3585	0.0114	0.1771
03-Sep	0.0282	0.0363	0.0549	0.7144	0.5435	0.2645	1.2113	1.5588	2.3620	0.6779	0.0078	2.3084
04-Sep	0.0186	0.0446	0.0425	0.7330	0.5880	0.3070	0.8174	1.9611	1.8707	0.6479	0.0956	1.2780
05-Sep	0.0461	0.0307	0.0117	0.7792	0.6187	0.3187	2.0764	1.3812	0.5271	2.2002	0.1865	0.2353
06-Sep	0.0422	0.0474	0.0651	0.8213	0.6661	0.3838	1.9391	2.1801	2.9955	2.6344	0.5690	0.7898
07-Sep	0.0244	0.0342	0.0240	0.8457	0.7003	0.4078	1.1451	1.6064	1.1285	1.9322	0.6813	0.1480
08-Sep	0.0090	0.0334	0.0130	0.8547	0.7337	0.4208	0.4312	1.6037	0.6240	0.8814	0.9978	0.0286
09-Sep	0.0056	0.0259	0.0177	0.8602	0.7596	0.4385	0.2727	1.2669	0.8666	0.6618	1.0806	0.0041
10-Sep	0.0206	0.0303	0.1005	0.8808	0.7899	0.5390	1.0301	1.5156	5.0246	2.9202	1.6891	0.0269
11-Sep	0.0229	0.0353	0.0422	0.9037	0.8252	0.5812	1.1684	1.8025	2.1504	3.8156	2.5325	0.0971
12-Sep	0.0158	0.0177	0.0018	0.9195	0.8429	0.5829	0.8203	0.9205	0.0914	3.0502	1.5859	0.0111

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DATE	DAILY PROPORTIONS			CUMULATIVE PROPORTIONS			MEAN DATE COMPONENTS			VARIANCE COMPONENTS		
	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums
13-Sep	0.0085	0.0143	0.0205	0.9280	0.8572	0.6034	0.4500	0.7587	1.0863	1.8865	1.5677	0.2536
14-Sep	0.0134	0.0236	0.1039	0.9414	0.8808	0.7073	0.7257	1.2731	5.6100	3.3996	3.0990	2.1200
15-Sep	0.0121	0.0088	0.0157	0.9535	0.8897	0.7230	0.6640	0.4867	0.8632	3.4505	1.3749	0.4778
16-Sep	0.0099	0.0094	0.0177	0.9634	0.8990	0.7407	0.5519	0.5244	0.9904	3.1598	1.6979	0.7512
17-Sep	0.0071	0.0168	0.0497	0.9705	0.9159	0.7903	0.4056	0.9600	2.8306	2.5433	3.5238	2.8064
18-Sep	0.0050	0.0158	0.0474	0.9755	0.9317	0.8378	0.2900	0.9183	2.7512	1.9810	3.7865	3.4412
19-Sep	0.0069	0.0122	0.0315	0.9824	0.9439	0.8693	0.4069	0.7187	1.8589	3.0142	3.3023	2.8539
20-Sep	0.0055	0.0119	0.0221	0.9878	0.9558	0.8914	0.3282	0.7147	1.3282	2.6247	3.6332	2.4486
21-Sep	0.0036	0.0069	0.0146	0.9915	0.9627	0.9061	0.2224	0.4188	0.8931	1.9132	2.3407	1.9421
22-Sep	0.0023	0.0102	0.0301	0.9938	0.9729	0.9362	0.1432	0.6352	1.8662	1.3198	3.8815	4.7163
23-Sep	0.0005	0.0057	0.0134	0.9943	0.9786	0.9495	0.0345	0.3567	0.8412	0.3393	2.3714	2.4397
24-Sep	0.0009	0.0055	0.0158	0.9952	0.9841	0.9653	0.0545	0.3521	1.0119	0.5710	2.5348	3.3324
25-Sep	0.0012	0.0025	0.0055	0.9964	0.9866	0.9708	0.0790	0.1629	0.3578	0.8799	1.2649	1.3255
26-Sep	0.0012	0.0027	0.0053	0.9976	0.9893	0.9761	0.0762	0.1783	0.3479	0.8992	1.4872	1.4379
27-Sep	0.0011	0.0024	0.0050	0.9987	0.9916	0.9811	0.0733	0.1579	0.3374	0.9140	1.4102	1.5454
28-Sep	0.0009	0.0016	0.0034	0.9996	0.9932	0.9845	0.0620	0.1066	0.2310	0.8153	1.0164	1.1647
29-Sep	0.0004	0.0013	0.0030	1.0000	0.9945	0.9876	0.0294	0.0902	0.2101	0.4063	0.9158	1.1600
30-Sep	0.0000	0.0008	0.0015	1.0000	0.9953	0.9891	0.0000	0.0549	0.1066	0.0000	0.5917	0.6410
01-Oct	0.0000	0.0008	0.0016	1.0000	0.9961	0.9907	0.0000	0.0561	0.1164	0.0000	0.6407	0.7592
02-Oct	0.0000	0.0011	0.0023	1.0000	0.9972	0.9931	0.0000	0.0772	0.1687	0.0000	0.9308	1.1877
03-Oct	0.0000	0.0009	0.0022	1.0000	0.9981	0.9953	0.0000	0.0683	0.1625	0.0000	0.8684	1.2308
04-Oct	0.0000	0.0008	0.0021	1.0000	0.9989	0.9974	0.0000	0.0586	0.1560	0.0000	0.7837	1.2673
05-Oct	0.0000	0.0007	0.0018	1.0000	0.9996	0.9992	0.0000	0.0543	0.1318	0.0000	0.7626	1.1440
06-Oct	0.0000	0.0004	0.0008	1.0000	1.0000	1.0000	0.0000	0.0293	0.0623	0.0000	0.4313	0.5765
	1.0000	1.0000	1.0000				MEAN OF MAXIMUMS	MEAN OF AVERAGES	MEAN OF MINIMUMS	VAR =	102.51	
							38.09	42.54	49.48	S.D. =	10.12	

Appendix F.1. Chum salmon counts expanded for inclusion in the migration timing database, 1976, 1978, 1979, 1981, 1982, 1984, 1985, 1986, and 1988, Kogrukluk River, Alaska.

DAILY COUNTS a													
DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
15-Jun		b			b	2.0		b				b	
16-Jun			2.0			0.0							
17-Jun			0.0	2.0		0.0	2.0						2.0
18-Jun			0.0	0.0		9.0	0.0						0.0
19-Jun			9.0	0.0		3.0	0.0		2				0.0
20-Jun			3.0	9.0		13.0	9.0		0				9.0
21-Jun			13.0	3.0		39.0	3.0		0				3.0
22-Jun			39.0	13.0		42.0	13.0		9				13.0
23-Jun	2.0		42.0	39.0		43.0	39.0		3	2.0	2.0		39.0
24-Jun	0.0		43.0	42.0		38.0	42.0		13	0.0	0.0		42.0
25-Jun	0.0		38.0	43.0		222.0	43.0		39	0.0	0.0		43.0
26-Jun	9.0		222.0	38.0		275.0	38.0		42	9.0	9.0		38.0
27-Jun	3.0		275.0	50.0		417.0	222.0		43	3.0	3.0		222.0
28-Jun	13.0		308	65.0		1203	275.0		38	13.0	13.0		275.0
29-Jun	26		618	80.0		2264	417.0	345	222	39.0	30		417.0
30-Jun	49		629	100.0		2255	1203.0	222	275	42.0	69		939.0
01-Jul	118		648	95.0		2650	2264.0	345	417	43.0	184		2000.0
02-Jul	81		1032	127	281	3516	2255.0	536	939	38.0	152		2500.0
03-Jul	130		1695	117	269	3607	2650.0		1154	222.0	291		2500.0
04-Jul	189		1679	313	135	2107	3516.0		1371	275.0	472		2000.0
05-Jul	182		1954	298	202	1936	3607.0		841	417.0	306		1845
06-Jul	339		2151	210	282	2873	2107.0	178	1616	261	343		1380
07-Jul	523		1403	259	69	2246	1936.0	590	1896	685	366		1694
08-Jul	613		2156	215	63	1900	2873.0	411	1950	381	509		1959
09-Jul	679		2296	237	343	2892	4469	415	1964	618	925		2751
10-Jul	510		2802	567		3513	3396	201	1092	542	1399		2151
11-Jul	365		2969	865		2888	2999	5	1301	382	1621		2638
12-Jul	421		2350	1227		2031	2581		2766	499	1167		2635
13-Jul	336		2172	1296		1869	2961		2077	539	939		1960
14-Jul	322	108	3351	1165		2287	2442		2323	707	854		2078
15-Jul	323	169	2502	810		2456	1945		2512	557	891	577	1772
16-Jul	341	244	2580	967		1930	2421		2271	836	476	1163	997
17-Jul	265	173	1881	949		1180	3018		1907	724	600		727
18-Jul	333	265	1522	653		1300	2563		1336	646	362		410
19-Jul	282	770	1381	594		928	1919		969	628	344.0		459
20-Jul	240	1255	1311	551		429	1710		1420	511	230.0		335
21-Jul	591	581	645	573		724	1414		1688	472	193.0		344
22-Jul	253	1154	975	414		686	904		1652	473	228.0		230
23-Jul	166	882	766	455		531	916		1205	449	95.0		193
24-Jul	173	1145	879	1097		501	747		712	525	124.0		228
25-Jul	74	1277	815	501.0		265	638		390	575	103.0		95
26-Jul	32	1241	563	265.0		348	547		417	459	119.0		124
27-Jul	33	1124	390	348.0		378	476		457	316	97.0		103
28-Jul	12		239	378.0		492	393		325	341	147.0		119
29-Jul	24		215	492.0		383	384		320	242	134.0		97
30-Jul	14		110	383.0		362	440		268	217	113.0		147
31-Jul	7		112	362.0		284	273		318	259	92.0		134

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DAILY COUNTS a													
DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
01-Aug	12.0		100.0	284.0		209	230		280	149	71.0		113.0
02-Aug	12.0		74.0	209.0		183	187		217	149	72.0		92.0
03-Aug	5.0		32.0	183.0		146	172		159	91	61.0		71
04-Aug	9.0		33.0	146.0		78	91		133	87	62.0		72
05-Aug	1.0		12.0	78.0		35	104		50	58	55.0		61
06-Aug	0.0		24.0	35.0		55	32		20	52	53.0		62
07-Aug	0.0		14.0	55.0		43	37		13	52	45.0		55
08-Aug	1.0		7.0	43.0		43	22		8	77	47.0		53
09-Aug	0.0		12.0	43.0		41	38		9	45	35.0		45
10-Aug	1.0		12.0	41.0		47	19		11	82	37.0	98	47
11-Aug	2.0		5.0	47.0		29	16		11	54	18.0	90	35
12-Aug	1.0		9.0	29.0		25	16		9	30	16.0	96	37
13-Aug			1.0	25.0		27	15		0	38	7.0	64	18
14-Aug			0.0	27.0		24	6		1	19	13.0	42	16
15-Aug			0.0	24.0		23	2		1	16	20.0	35	7
16-Aug			1.0	23.0		6	2		0	15.0	20.0	15	13
17-Aug			0.0	6.0		5	4		1	12.0	15.0	28	20
18-Aug			1.0	5.0		4	3.0		1	12.0	12.0	29	20
19-Aug			2.0	4.0		2	1.0		0	5.0	12.0	22	15
20-Aug			1.0	2.0		9	5.0		0	9.0	5.0	20	12
21-Aug				9.0		5	1.0			1.0	9.0	13	12
22-Aug				5.0		0	4.0			0.0	1.0	7	5
23-Aug				0.0		1				0.0	0.0	6	9
24-Aug				1.0		3				1.0	0.0	6	1
25-Aug				3.0		2				0.0	1.0	3	0
26-Aug				2.0		1				1.0	0.0	1	0
27-Aug				1.0		2				2.0	1.0	5	1
28-Aug				2.0		0				1.0	2.0	1	0
29-Aug				0.0		0					1.0	4	1

a Data which appear as real numbers with a single decimal place are subjectively estimated. Data which appear in integer form are actual counts.

b Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix F.2. Daily proportions of estimated chum salmon counts, Kogrukluk River, 1976-1988.

DAILY PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
2	16-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
3	17-Jun	0.0000		0.0000	0.0001		0.0000	0.0000		0.0000	0.0000	0.0000		0.0001
4	18-Jun	0.0000		0.0000	0.0000		0.0002	0.0000		0.0000	0.0000	0.0000		0.0000
5	19-Jun	0.0000		0.0002	0.0000		0.0001	0.0000		0.0000	0.0000	0.0000		0.0000
6	20-Jun	0.0000		0.0001	0.0005		0.0002	0.0001		0.0000	0.0000	0.0000		0.0002
7	21-Jun	0.0000		0.0003	0.0002		0.0007	0.0000		0.0000	0.0000	0.0000		0.0001
8	22-Jun	0.0000		0.0008	0.0007		0.0007	0.0002		0.0002	0.0000	0.0000		0.0003
9	23-Jun	0.0002		0.0009	0.0021		0.0007	0.0006		0.0001	0.0001	0.0001		0.0010
10	24-Jun	0.0000		0.0009	0.0023		0.0007	0.0007		0.0003	0.0000	0.0000		0.0011
11	25-Jun	0.0000		0.0008	0.0023		0.0039	0.0007		0.0009	0.0000	0.0000		0.0011
12	26-Jun	0.0011		0.0046	0.0020		0.0048	0.0006		0.0010	0.0006	0.0006		0.0010
13	27-Jun	0.0004		0.0057	0.0027		0.0073	0.0035		0.0010	0.0002	0.0002		0.0056
14	28-Jun	0.0016		0.0064	0.0035		0.0210	0.0043		0.0009	0.0009	0.0009		0.0070
15	29-Jun	0.0032		0.0128	0.0043		0.0395	0.0065		0.0054	0.0026	0.0020		0.0105
16	30-Jun	0.0060		0.0131	0.0054		0.0393	0.0188		0.0066	0.0028	0.0047		0.0237
17	01-Jul	0.0145		0.0135	0.0051		0.0462	0.0353		0.0101	0.0029	0.0125		0.0506
18	02-Jul	0.0100		0.0214	0.0068		0.0613	0.0352		0.0226	0.0025	0.0103		0.0632
19	03-Jul	0.0160		0.0352	0.0063		0.0629	0.0414		0.0278	0.0148	0.0198		0.0632
20	04-Jul	0.0233		0.0349	0.0168		0.0367	0.0549		0.0330	0.0183	0.0321		0.0506
21	05-Jul	0.0224		0.0406	0.0160		0.0337	0.0563		0.0203	0.0278	0.0208		0.0467
22	06-Jul	0.0418		0.0447	0.0113		0.0501	0.0329		0.0390	0.0174	0.0233		0.0349
23	07-Jul	0.0644		0.0292	0.0139		0.0392	0.0302		0.0457	0.0457	0.0249		0.0428
24	08-Jul	0.0755		0.0448	0.0116		0.0331	0.0448		0.0470	0.0254	0.0346		0.0495
25	09-Jul	0.0837		0.0477	0.0127		0.0504	0.0697		0.0473	0.0412	0.0630		0.0696
26	10-Jul	0.0628		0.0582	0.0305		0.0612	0.0530		0.0263	0.0361	0.0952		0.0544
27	11-Jul	0.0450		0.0617	0.0465		0.0503	0.0468		0.0314	0.0255	0.1103		0.0667
28	12-Jul	0.0519		0.0488	0.0660		0.0354	0.0403		0.0667	0.0333	0.0794		0.0666
29	13-Jul	0.0414		0.0451	0.0697		0.0326	0.0462		0.0501	0.0359	0.0639		0.0496
30	14-Jul	0.0397		0.0696	0.0626		0.0399	0.0381		0.0560	0.0471	0.0581		0.0526
31	15-Jul	0.0398		0.0520	0.0436		0.0428	0.0304		0.0606	0.0371	0.0606		0.0448
32	16-Jul	0.0420		0.0536	0.0520		0.0336	0.0378		0.0547	0.0557	0.0324		0.0252
33	17-Jul	0.0326		0.0391	0.0510		0.0206	0.0471		0.0460	0.0483	0.0408		0.0184
34	18-Jul	0.0410		0.0316	0.0351		0.0227	0.0400		0.0322	0.0431	0.0246		0.0104
35	19-Jul	0.0347		0.0287	0.0319		0.0162	0.0299		0.0234	0.0419	0.0234		0.0116
36	20-Jul	0.0296		0.0272	0.0296		0.0075	0.0267		0.0342	0.0341	0.0157		0.0085
37	21-Jul	0.0728		0.0134	0.0308		0.0126	0.0221		0.0407	0.0315	0.0131		0.0087
38	22-Jul	0.0312		0.0203	0.0223		0.0120	0.0141		0.0398	0.0315	0.0155		0.0058
39	23-Jul	0.0205		0.0159	0.0245		0.0093	0.0143		0.0290	0.0299	0.0065		0.0049
40	24-Jul	0.0213		0.0183	0.0590		0.0087	0.0117		0.0172	0.0350	0.0084		0.0058
41	25-Jul	0.0091		0.0169	0.0269		0.0046	0.0100		0.0094	0.0383	0.0070		0.0024
42	26-Jul	0.0039		0.0117	0.0142		0.0061	0.0085		0.0101	0.0306	0.0081		0.0031
43	27-Jul	0.0041		0.0081	0.0187		0.0066	0.0074		0.0110	0.0211	0.0066		0.0026
44	28-Jul	0.0015		0.0050	0.0203		0.0086	0.0061		0.0078	0.0227	0.0100		0.0030
45	29-Jul	0.0030		0.0045	0.0265		0.0067	0.0060		0.0077	0.0161	0.0091		0.0025
46	30-Jul	0.0017		0.0023	0.0206		0.0063	0.0069		0.0065	0.0145	0.0077		0.0037
47	31-Jul	0.0009		0.0023	0.0195		0.0050	0.0043		0.0077	0.0173	0.0063		0.0034

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DAILY PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
48	01-Aug	0.0015		0.0021	0.0153		0.0036	0.0036		0.0067	0.0099	0.0048		0.0029
49	02-Aug	0.0015		0.0015	0.0112		0.0032	0.0029		0.0052	0.0099	0.0049		0.0023
50	03-Aug	0.0006		0.0007	0.0098		0.0025	0.0027		0.0038	0.0061	0.0042		0.0018
51	04-Aug	0.0011		0.0007	0.0078		0.0014	0.0014		0.0032	0.0058	0.0042		0.0018
52	05-Aug	0.0001		0.0002	0.0042		0.0006	0.0016		0.0012	0.0039	0.0037		0.0015
53	06-Aug	0.0000		0.0005	0.0019		0.0010	0.0005		0.0005	0.0035	0.0036		0.0016
54	07-Aug	0.0000		0.0003	0.0030		0.0007	0.0006		0.0003	0.0035	0.0031		0.0014
55	08-Aug	0.0001		0.0001	0.0023		0.0007	0.0003		0.0002	0.0051	0.0032		0.0013
56	09-Aug	0.0000		0.0002	0.0023		0.0007	0.0006		0.0002	0.0030	0.0024		0.0011
57	10-Aug	0.0001		0.0002	0.0022		0.0008	0.0003		0.0003	0.0055	0.0025		0.0012
58	11-Aug	0.0002		0.0001	0.0025		0.0005	0.0002		0.0003	0.0036	0.0012		0.0009
59	12-Aug	0.0001		0.0002	0.0016		0.0004	0.0002		0.0002	0.0020	0.0011		0.0009
60	13-Aug	0.0000		0.0000	0.0013		0.0005	0.0002		0.0000	0.0025	0.0005		0.0005
61	14-Aug	0.0000		0.0000	0.0015		0.0004	0.0001		0.0000	0.0013	0.0009		0.0004
62	15-Aug	0.0000		0.0000	0.0013		0.0004	0.0000		0.0000	0.0011	0.0014		0.0002
63	16-Aug	0.0000		0.0000	0.0012		0.0001	0.0000		0.0000	0.0010	0.0014		0.0003
64	17-Aug	0.0000		0.0000	0.0003		0.0001	0.0001		0.0000	0.0008	0.0010		0.0005
65	18-Aug	0.0000		0.0000	0.0003		0.0001	0.0000		0.0000	0.0008	0.0008		0.0005
66	19-Aug	0.0000		0.0000	0.0002		0.0000	0.0000		0.0000	0.0003	0.0008		0.0004
67	20-Aug	0.0000		0.0000	0.0001		0.0002	0.0001		0.0000	0.0006	0.0003		0.0003
68	21-Aug	0.0000		0.0000	0.0005		0.0001	0.0000		0.0000	0.0001	0.0006		0.0003
69	22-Aug	0.0000		0.0000	0.0003		0.0000	0.0001		0.0000	0.0000	0.0001		0.0001
70	23-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0002
71	24-Aug	0.0000		0.0000	0.0001		0.0001	0.0000		0.0000	0.0001	0.0000		0.0000
72	25-Aug	0.0000		0.0000	0.0002		0.0000	0.0000		0.0000	0.0000	0.0001		0.0000
73	26-Aug	0.0000		0.0000	0.0001		0.0000	0.0000		0.0000	0.0001	0.0000		0.0000
74	27-Aug	0.0000		0.0000	0.0001		0.0000	0.0000		0.0000	0.0001	0.0001		0.0000
75	28-Aug	0.0000		0.0000	0.0001		0.0000	0.0000		0.0000	0.0001	0.0001		0.0000
76	29-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0001		0.0000
TOTAL		1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix F.3. Cumulative proportions of estimated chum salmon counts, Kogrukluk River, 1976-1988.

CUMULATIVE PROPORTIONS														
t	DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
1	15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
2	16-Jun	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
3	17-Jun	0.0000		0.0000	0.0001		0.0000	0.0000		0.0000	0.0000	0.0000		0.0001
4	18-Jun	0.0000		0.0000	0.0001		0.0002	0.0000		0.0000	0.0000	0.0000		0.0001
5	19-Jun	0.0000		0.0002	0.0001		0.0002	0.0000		0.0000	0.0000	0.0000		0.0001
6	20-Jun	0.0000		0.0003	0.0006		0.0005	0.0002		0.0000	0.0000	0.0000		0.0003
7	21-Jun	0.0000		0.0006	0.0008		0.0012	0.0002		0.0000	0.0000	0.0000		0.0004
8	22-Jun	0.0000		0.0014	0.0015		0.0019	0.0004		0.0003	0.0000	0.0000		0.0007
9	23-Jun	0.0002		0.0022	0.0035		0.0026	0.0010		0.0003	0.0001	0.0001		0.0017
10	24-Jun	0.0002		0.0031	0.0058		0.0033	0.0017		0.0007	0.0001	0.0001		0.0027
11	25-Jun	0.0002		0.0039	0.0081		0.0072	0.0024		0.0016	0.0001	0.0001		0.0038
12	26-Jun	0.0014		0.0085	0.0102		0.0120	0.0029		0.0026	0.0007	0.0007		0.0048
13	27-Jun	0.0017		0.0143	0.0129		0.0192	0.0064		0.0036	0.0009	0.0010		0.0104
14	28-Jun	0.0033		0.0207	0.0163		0.0402	0.0107		0.0046	0.0018	0.0018		0.0173
15	29-Jun	0.0065		0.0335	0.0206		0.0797	0.0172		0.0099	0.0044	0.0039		0.0279
16	30-Jun	0.0126		0.0466	0.0260		0.1190	0.0360		0.0165	0.0072	0.0086		0.0516
17	01-Jul	0.0271		0.0600	0.0311		0.1652	0.0713		0.0266	0.0101	0.0211		0.1022
18	02-Jul	0.0371		0.0815	0.0380		0.2265	0.1065		0.0492	0.0126	0.0314		0.1655
19	03-Jul	0.0531		0.1167	0.0442		0.2893	0.1479		0.0770	0.0274	0.0512		0.2287
20	04-Jul	0.0764		0.1516	0.0611		0.3261	0.2027		0.1101	0.0457	0.0834		0.2793
21	05-Jul	0.0988		0.1922	0.0771		0.3598	0.2590		0.1304	0.0735	0.1042		0.3259
22	06-Jul	0.1406		0.2369	0.0884		0.4099	0.2919		0.1693	0.0909	0.1275		0.3608
23	07-Jul	0.2050		0.2660	0.1023		0.4491	0.3221		0.2150	0.1366	0.1525		0.4037
24	08-Jul	0.2805		0.3108	0.1139		0.4822	0.3670		0.2620	0.1619	0.1871		0.4532
25	09-Jul	0.3642		0.3585	0.1266		0.5326	0.4367		0.3094	0.2031	0.2501		0.5228
26	10-Jul	0.4270		0.4168	0.1571		0.5938	0.4897		0.3357	0.2393	0.3453		0.5772
27	11-Jul	0.4720		0.4785	0.2036		0.6442	0.5365		0.3671	0.2647	0.4556		0.6439
28	12-Jul	0.5238		0.5273	0.2696		0.6796	0.5768		0.4337	0.2980	0.5350		0.7105
29	13-Jul	0.5652		0.5724	0.3393		0.7122	0.6230		0.4838	0.3339	0.5989		0.7601
30	14-Jul	0.6049		0.6421	0.4019		0.7520	0.6611		0.5398	0.3810	0.6570		0.8127
31	15-Jul	0.6447		0.6940	0.4455		0.7948	0.6915		0.6004	0.4181	0.7177		0.8575
32	16-Jul	0.6867		0.7477	0.4974		0.8285	0.7292		0.6551	0.4738	0.7501		0.8827
33	17-Jul	0.7194		0.7867	0.5485		0.8491	0.7763		0.7011	0.5221	0.7909		0.9011
34	18-Jul	0.7604		0.8184	0.5836		0.8717	0.8163		0.7333	0.5651	0.8156		0.9115
35	19-Jul	0.7951		0.8471	0.6155		0.8879	0.8463		0.7566	0.6070	0.8390		0.9231
36	20-Jul	0.8247		0.8743	0.6451		0.8954	0.8730		0.7909	0.6411	0.8546		0.9315
37	21-Jul	0.8975		0.8877	0.6760		0.9080	0.8950		0.8315	0.6725	0.8678		0.9402
38	22-Jul	0.9287		0.9080	0.6982		0.9200	0.9092		0.8714	0.7040	0.8833		0.9461
39	23-Jul	0.9491		0.9239	0.7227		0.9292	0.9235		0.9004	0.7340	0.8897		0.9509
40	24-Jul	0.9704		0.9422	0.7817		0.9379	0.9351		0.9176	0.7689	0.8982		0.9567
41	25-Jul	0.9795		0.9591	0.8086		0.9426	0.9451		0.9270	0.8073	0.9052		0.9591
42	26-Jul	0.9835		0.9708	0.8228		0.9486	0.9536		0.9370	0.8379	0.9133		0.9622
43	27-Jul	0.9876		0.9789	0.8416		0.9552	0.9610		0.9481	0.8589	0.9199		0.9648
44	28-Jul	0.9890		0.9839	0.8619		0.9638	0.9672		0.9559	0.8816	0.9299		0.9679
45	29-Jul	0.9920		0.9883	0.8883		0.9705	0.9732		0.9636	0.8978	0.9390		0.9703
46	30-Jul	0.9937		0.9906	0.9089		0.9768	0.9800		0.9701	0.9122	0.9467		0.9740
47	31-Jul	0.9946		0.9929	0.9284		0.9817	0.9843		0.9777	0.9295	0.9530		0.9774

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t	DATE	CUMULATIVE PROPORTIONS												
		1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
48	01-Aug	0.9961		0.9950	0.9437		0.9854	0.9879		0.9845	0.9394	0.9578		0.9803
49	02-Aug	0.9975		0.9966	0.9549		0.9886	0.9908		0.9897	0.9494	0.9627		0.9826
50	03-Aug	0.9982		0.9972	0.9647		0.9911	0.9935		0.9935	0.9554	0.9669		0.9844
51	04-Aug	0.9993		0.9979	0.9726		0.9925	0.9949		0.9967	0.9612	0.9711		0.9862
52	05-Aug	0.9994		0.9982	0.9768		0.9931	0.9965		0.9980	0.9651	0.9748		0.9878
53	06-Aug	0.9994		0.9986	0.9787		0.9940	0.9970		0.9984	0.9685	0.9784		0.9893
54	07-Aug	0.9994		0.9989	0.9816		0.9948	0.9976		0.9987	0.9720	0.9815		0.9907
55	08-Aug	0.9995		0.9991	0.9839		0.9955	0.9979		0.9989	0.9771	0.9847		0.9921
56	09-Aug	0.9995		0.9993	0.9862		0.9963	0.9985		0.9992	0.9801	0.9871		0.9932
57	10-Aug	0.9996		0.9996	0.9884		0.9971	0.9988		0.9994	0.9856	0.9896		0.9944
58	11-Aug	0.9999		0.9997	0.9910		0.9976	0.9991		0.9997	0.9892	0.9908		0.9953
59	12-Aug	1.0000		0.9999	0.9925		0.9980	0.9993		0.9999	0.9912	0.9919		0.9962
60	13-Aug	1.0000		0.9999	0.9939		0.9985	0.9996		0.9999	0.9937	0.9924		0.9967
61	14-Aug	1.0000		0.9999	0.9953		0.9989	0.9997		0.9999	0.9950	0.9933		0.9971
62	15-Aug	1.0000		0.9999	0.9966		0.9993	0.9997		1.0000	0.9961	0.9946		0.9972
63	16-Aug	1.0000		0.9999	0.9978		0.9994	0.9997		1.0000	0.9971	0.9960		0.9976
64	17-Aug	1.0000		0.9999	0.9982		0.9995	0.9998		1.0000	0.9979	0.9970		0.9981
65	18-Aug	1.0000		0.9999	0.9984		0.9996	0.9998		1.0000	0.9987	0.9978		0.9986
66	19-Aug	1.0000		1.0000	0.9987		0.9996	0.9998		1.0000	0.9990	0.9986		0.9990
67	20-Aug	1.0000		1.0000	0.9988		0.9998	0.9999		1.0000	0.9996	0.9990		0.9993
68	21-Aug	1.0000		1.0000	0.9992		0.9998	0.9999		1.0000	0.9997	0.9996		0.9996
69	22-Aug	1.0000		1.0000	0.9995		0.9998	1.0000		1.0000	0.9997	0.9997		0.9997
70	23-Aug	1.0000		1.0000	0.9995		0.9999	1.0000		1.0000	0.9997	0.9997		0.9999
71	24-Aug	1.0000		1.0000	0.9996		0.9999	1.0000		1.0000	0.9997	0.9997		0.9999
72	25-Aug	1.0000		1.0000	0.9997		0.9999	1.0000		1.0000	0.9997	0.9997		0.9999
73	26-Aug	1.0000		1.0000	0.9998		1.0000	1.0000		1.0000	0.9998	0.9997		0.9999
74	27-Aug	1.0000		1.0000	0.9999		1.0000	1.0000		1.0000	0.9999	0.9998		1.0000
75	28-Aug	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	0.9999		1.0000
76	29-Aug	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000
	MAXIMUM	1.0000		1.0000	1.0000		1.0000	1.0000		1.0000	1.0000	1.0000		1.0000

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix F.4. Mean date statistics of estimated chum salmon counts, Kogrukluk River, 1976-1988.

DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
15-Jun	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	a	0.0000	0.0000	0.0000	a	0.0000
16-Jun	0.0000		0.0001	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
17-Jun	0.0000		0.0000	0.0003		0.0000	0.0001		0.0000	0.0000	0.0000		0.0002
18-Jun	0.0000		0.0000	0.0000		0.0006	0.0000		0.0000	0.0000	0.0000		0.0000
19-Jun	0.0000		0.0009	0.0000		0.0003	0.0000		0.0002	0.0000	0.0000		0.0000
20-Jun	0.0000		0.0004	0.0029		0.0014	0.0008		0.0000	0.0000	0.0000		0.0014
21-Jun	0.0000		0.0019	0.0011		0.0048	0.0003		0.0000	0.0000	0.0000		0.0005
22-Jun	0.0000		0.0065	0.0056		0.0059	0.0016		0.0017	0.0000	0.0000		0.0026
23-Jun	0.0022		0.0079	0.0189		0.0067	0.0055		0.0007	0.0012	0.0012		0.0089
24-Jun	0.0000		0.0089	0.0226		0.0066	0.0066		0.0031	0.0000	0.0000		0.0106
25-Jun	0.0000		0.0087	0.0254		0.0426	0.0074		0.0103	0.0000	0.0000		0.0120
26-Jun	0.0133		0.0554	0.0245		0.0575	0.0071		0.0121	0.0072	0.0074		0.0115
27-Jun	0.0048		0.0743	0.0349		0.0945	0.0450		0.0135	0.0026	0.0027		0.0730
28-Jun	0.0224		0.0896	0.0489		0.2936	0.0601		0.0128	0.0121	0.0124		0.0974
29-Jun	0.0480		0.1926	0.0645		0.5920	0.0976		0.0803	0.0390	0.0306		0.1582
30-Jun	0.0966		0.2091	0.0860		0.6290	0.3004		0.1061	0.0448	0.0751		0.3800
01-Jul	0.2471		0.2289	0.0868		0.7853	0.6007		0.1709	0.0487	0.2129		0.8599
02-Jul	0.1796		0.3860	0.1229		1.1033	0.6335		0.4074	0.0456	0.1862		1.1381
03-Jul	0.3043		0.6692	0.1195		1.1947	0.7858		0.5285	0.2811	0.3763		1.2013
04-Jul	0.4657		0.6978	0.3366		0.7346	1.0974		0.6610	0.3665	0.6425		1.0116
05-Jul	0.4709		0.8527	0.3365		0.7087	1.1821		0.4257	0.5836	0.4374		0.9799
06-Jul	0.9188		0.9833	0.2484		1.1018	0.7234		0.8570	0.3827	0.5136		0.7678
07-Jul	1.4820		0.6705	0.3203		0.9005	0.6949		1.0512	1.0500	0.5729		0.9854
08-Jul	1.8125		1.0752	0.2774		0.7949	1.0761		1.1281	0.6094	0.8314		1.1891
09-Jul	2.0913		1.1927	0.3186		1.2604	1.7436		1.1836	1.0297	1.5739		1.7394
10-Jul	1.6336		1.5138	0.7926		1.5922	1.3780		0.6844	0.9392	2.4756		1.4144
11-Jul	1.2141		1.6657	1.2557		1.3593	1.2637		0.8468	0.6874	2.9788		1.8014
12-Jul	1.4523		1.3673	1.8472		0.9913	1.1278		1.8669	0.9312	2.2239		1.8660
13-Jul	1.2004		1.3088	2.0208		0.9448	1.3401		1.4520	1.0417	1.8533		1.4375
14-Jul	1.1901		2.0889	1.8791		1.1960	1.1433		1.6799	1.4135	1.7437		1.5766
15-Jul	1.2336		1.6117	1.3501		1.3272	0.9410		1.8772	1.1507	1.8799		1.3893
16-Jul	1.3443		1.7155	1.6637		1.0766	1.2090		1.7518	1.7829	1.0367		0.8069
17-Jul	1.0774		1.2898	1.6838		0.6788	1.5543		1.5170	1.5923	1.3476		0.6068
18-Jul	1.3949		1.0753	1.1937		0.7705	1.3600		1.0950	1.4638	0.8377		0.3526
19-Jul	1.2160		1.0044	1.1178		0.5662	1.0482		0.8175	1.4648	0.8194		0.4063
20-Jul	1.0644		0.9807	1.0665		0.2692	0.9607		1.2323	1.2260	0.5635		0.3050
21-Jul	2.6940		0.4959	1.1399		0.4670	0.8165		1.5055	1.1639	0.4860		0.3219
22-Jul	1.1844		0.7699	0.8459		0.4544	0.5361		1.5133	1.1979	0.5897		0.2210
23-Jul	0.7976		0.6208	0.9541		0.3610	0.5575		1.1328	1.1670	0.2522		0.1904
24-Jul	0.8525		0.7306	2.3593		0.3493	0.4663		0.6865	1.3995	0.3376		0.2307
25-Jul	0.3738		0.6943	1.1044		0.1894	0.4082		0.3854	1.5711	0.2874		0.0985
26-Jul	0.1656		0.4913	0.5984		0.2548	0.3585		0.4222	1.2848	0.3402		0.1317
27-Jul	0.1748		0.3485	0.8046		0.2833	0.3194		0.4737	0.9056	0.2839		0.1120
28-Jul	0.0650		0.2185	0.8942		0.3774	0.2699		0.3447	0.9999	0.4402		0.1324
29-Jul	0.1331		0.2010	1.1904		0.3004	0.2697		0.3471	0.7258	0.4104		0.1104
30-Jul	0.0793		0.1051	0.9473		0.2903	0.3159		0.2972	0.6652	0.3538		0.1710
31-Jul	0.0405		0.1094	0.9148		0.2327	0.2002		0.3603	0.8113	0.2943		0.1593

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DATE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
01-Aug	0.0710		0.0997	0.7329		0.1749	0.1723		0.3240	0.4766	0.2319		0.1372
02-Aug	0.0724		0.0753	0.5506		0.1563	0.1430		0.2563	0.4866	0.2401		0.1140
03-Aug	0.0308		0.0332	0.4920		0.1273	0.1342		0.1916	0.3032	0.2076		0.0898
04-Aug	0.0565		0.0350	0.4003		0.0693	0.0724		0.1635	0.2957	0.2152		0.0929
05-Aug	0.0064		0.0130	0.2181		0.0317	0.0844		0.0627	0.2010	0.1947		0.0802
06-Aug	0.0000		0.0264	0.0997		0.0508	0.0265		0.0256	0.1837	0.1912		0.0831
07-Aug	0.0000		0.0157	0.1597		0.0405	0.0312		0.0169	0.1871	0.1654		0.0751
08-Aug	0.0068		0.0080	0.1272		0.0412	0.0189		0.0106	0.2822	0.1759		0.0737
09-Aug	0.0000		0.0140	0.1295		0.0400	0.0332		0.0121	0.1679	0.1334		0.0637
10-Aug	0.0070		0.0142	0.1257		0.0467	0.0169		0.0151	0.3115	0.1435		0.0678
11-Aug	0.0143		0.0060	0.1466		0.0293	0.0145		0.0154	0.2087	0.0711		0.0513
12-Aug	0.0073		0.0110	0.0920		0.0257	0.0147		0.0128	0.1180	0.0642		0.0552
13-Aug	0.0000		0.0012	0.0806		0.0282	0.0140		0.0000	0.1519	0.0286		0.0273
14-Aug	0.0000		0.0000	0.0886		0.0255	0.0057		0.0015	0.0772	0.0540		0.0247
15-Aug	0.0000		0.0000	0.0800		0.0249	0.0019		0.0015	0.0661	0.0844		0.0110
16-Aug	0.0000		0.0013	0.0779		0.0066	0.0020		0.0000	0.0630	0.0858		0.0207
17-Aug	0.0000		0.0000	0.0206		0.0056	0.0040		0.0015	0.0512	0.0653		0.0324
18-Aug	0.0000		0.0014	0.0175		0.0045	0.0030		0.0016	0.0520	0.0531		0.0329
19-Aug	0.0000		0.0027	0.0142		0.0023	0.0010		0.0000	0.0220	0.0539		0.0250
20-Aug	0.0000		0.0014	0.0072		0.0105	0.0052		0.0000	0.0402	0.0228		0.0203
21-Aug	0.0000		0.0000	0.0329		0.0059	0.0011		0.0000	0.0045	0.0417		0.0206
22-Aug	0.0000		0.0000	0.0185		0.0000	0.0043		0.0000	0.0000	0.0047		0.0087
23-Aug	0.0000		0.0000	0.0000		0.0012	0.0000		0.0000	0.0000	0.0000		0.0159
24-Aug	0.0000		0.0000	0.0038		0.0037	0.0000		0.0000	0.0047	0.0000		0.0018
25-Aug	0.0000		0.0000	0.0116		0.0025	0.0000		0.0000	0.0000	0.0049		0.0000
26-Aug	0.0000		0.0000	0.0078		0.0013	0.0000		0.0000	0.0049	0.0000		0.0000
27-Aug	0.0000		0.0000	0.0040		0.0026	0.0000		0.0000	0.0099	0.0050		0.0019
28-Aug	0.0000		0.0000	0.0081		0.0000	0.0000		0.0000	0.0050	0.0102		0.0000
29-Aug	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0052		0.0019
	29.01		28.18	33.87		25.61	27.72		30.06	33.86	29.87		25.70
	29.32 = AVERAGE MEAN DATE			25.61 = MINIMUM MEAN DATE				33.87 = MAXIMUM MEAN DATE					

a Data in 1977, 1980, 1983, and 1987 was insufficient for estimating time series. No attempt is made to expand those data.

Appendix F.5. Maximum, average, and minimum daily and cumulative proportions of estimated chum salmon counts with corresponding tables of mean date and variance components of the time series of estimates, Kogruklu River, 1988.

DATE	DAILY PROPORTIONS			CUMULATIVE PROPORTIONS			MEAN DATE COMPONENTS			VARIANCE COMPONENTS		
	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums
15-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0198	0.0031	0.0000
16-Jun	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0035	0.0034	0.0000
17-Jun	0.0001	0.0000	0.0000	0.0001	0.0000	0.0000	0.0002	0.0001	0.0000	0.0314	0.0146	0.0000
18-Jun	0.0001	0.0000	0.0000	0.0002	0.0000	0.0000	0.0003	0.0001	0.0000	0.0365	0.0112	0.0000
19-Jun	0.0001	0.0000	0.0000	0.0002	0.0001	0.0000	0.0003	0.0002	0.0000	0.0206	0.0189	0.0000
20-Jun	0.0003	0.0001	0.0000	0.0006	0.0002	0.0000	0.0021	0.0008	0.0000	0.1231	0.0689	0.0000
21-Jun	0.0006	0.0001	0.0000	0.0012	0.0003	0.0000	0.0039	0.0010	0.0000	0.1776	0.0683	0.0000
22-Jun	0.0007	0.0003	0.0000	0.0019	0.0007	0.0000	0.0059	0.0027	0.0000	0.2072	0.1510	0.0000
23-Jun	0.0017	0.0007	0.0001	0.0035	0.0013	0.0001	0.0150	0.0059	0.0012	0.4171	0.2708	0.0853
24-Jun	0.0023	0.0006	0.0000	0.0058	0.0020	0.0001	0.0226	0.0065	0.0000	0.4962	0.2424	0.0000
25-Jun	0.0023	0.0011	0.0000	0.0081	0.0031	0.0001	0.0254	0.0118	0.0000	0.4418	0.3606	0.0000
26-Jun	0.0038	0.0018	0.0006	0.0120	0.0049	0.0007	0.0461	0.0218	0.0072	0.6314	0.5446	0.2980
27-Jun	0.0073	0.0030	0.0002	0.0192	0.0078	0.0009	0.0945	0.0384	0.0026	1.0162	0.7861	0.0906
28-Jun	0.0210	0.0052	0.0009	0.0402	0.0130	0.0018	0.2936	0.0721	0.0121	2.4568	1.2096	0.3567
29-Jun	0.0395	0.0097	0.0021	0.0797	0.0226	0.0039	0.5920	0.1448	0.0312	3.8088	1.9792	0.7740
30-Jun	0.0393	0.0134	0.0033	0.1190	0.0360	0.0072	0.6290	0.2141	0.0531	3.0606	2.3745	1.1101
01-Jul	0.0462	0.0212	0.0029	0.1652	0.0572	0.0101	0.7853	0.3601	0.0487	2.8277	3.2157	0.8568
02-Jul	0.0613	0.0259	0.0025	0.2265	0.0831	0.0126	1.1033	0.4670	0.0456	2.8540	3.3245	0.6721
03-Jul	0.0629	0.0319	0.0148	0.2893	0.1151	0.0274	1.1947	0.6067	0.2811	2.1326	3.4014	3.4592
04-Jul	0.0367	0.0334	0.0183	0.3261	0.1485	0.0457	0.7346	0.6682	0.3665	0.8546	2.9024	3.7429
05-Jul	0.0337	0.0316	0.0278	0.3598	0.1801	0.0735	0.7087	0.6642	0.5836	0.4934	2.1895	4.9091
06-Jul	0.0501	0.0328	0.0149	0.4099	0.2129	0.0884	1.1018	0.7219	0.3274	0.3993	1.7584	2.2483
07-Jul	0.0392	0.0373	0.0139	0.4491	0.2502	0.1023	0.9005	0.8586	0.3203	0.1302	1.4914	1.7752
08-Jul	0.0331	0.0407	0.0116	0.4822	0.2910	0.1139	0.7949	0.9771	0.2774	0.0225	1.1525	1.2242
09-Jul	0.0504	0.0539	0.0127	0.5326	0.3449	0.1266	1.2604	1.3481	0.3186	0.0016	1.0066	1.0999
10-Jul	0.0612	0.0531	0.0305	0.5938	0.3980	0.1571	1.5922	1.3804	0.7926	0.0847	0.5854	2.0955
11-Jul	0.0503	0.0538	0.0465	0.6442	0.4518	0.2036	1.3593	1.4525	1.2557	0.2384	0.2897	2.4722
12-Jul	0.0664	0.0543	0.0660	0.7105	0.5060	0.2696	1.8584	1.5193	1.8472	0.6696	0.0946	2.6108
13-Jul	0.0496	0.0483	0.0643	0.7601	0.5543	0.3339	1.4375	1.3999	1.8648	0.8646	0.0050	1.8000
14-Jul	0.0526	0.0515	0.0471	0.8127	0.6058	0.3810	1.5766	1.5457	1.4135	1.4081	0.0238	0.8675
15-Jul	0.0448	0.0457	0.0371	0.8575	0.6516	0.4181	1.3893	1.4178	1.1507	1.7095	0.1290	0.4020
16-Jul	0.0252	0.0430	0.0557	0.8827	0.6946	0.4738	0.8069	1.3764	1.7829	1.2985	0.3088	0.2924
17-Jul	0.0184	0.0382	0.0483	0.9011	0.7328	0.5221	0.6068	1.2609	1.5923	1.2292	0.5173	0.0804
18-Jul	0.0104	0.0312	0.0431	0.9115	0.7640	0.5651	0.3526	1.0604	1.4638	0.8731	0.6829	0.0036
19-Jul	0.0116	0.0269	0.0419	0.9231	0.7908	0.6070	0.4063	0.9401	1.4648	1.2021	0.8664	0.0211
20-Jul	0.0085	0.0237	0.0341	0.9315	0.8145	0.6411	0.3050	0.8520	1.2260	1.0583	1.0560	0.0995
21-Jul	0.0087	0.0273	0.0315	0.9402	0.8418	0.6725	0.3219	1.0101	1.1639	1.2899	1.6099	0.2309
22-Jul	0.0058	0.0214	0.0257	0.9461	0.8632	0.6982	0.2210	0.8125	0.9766	1.0099	1.6107	0.3536
23-Jul	0.0049	0.0172	0.0245	0.9509	0.8804	0.7227	0.1904	0.6704	0.9541	0.9809	1.6105	0.5425
24-Jul	0.0195	0.0206	0.0463	0.9704	0.9010	0.7689	0.7799	0.8236	1.8508	4.4904	2.3483	1.5082
25-Jul	0.0091	0.0139	0.0383	0.9795	0.9148	0.8073	0.3738	0.5681	1.5711	2.3856	1.8900	1.7249
26-Jul	0.0039	0.0107	0.0156	0.9835	0.9255	0.8228	0.1656	0.4497	0.6542	1.1631	1.7215	0.9257
27-Jul	0.0041	0.0096	0.0187	0.9876	0.9351	0.8416	0.1748	0.4118	0.8046	1.3432	1.7919	1.4192
28-Jul	0.0015	0.0095	0.0203	0.9890	0.9446	0.8619	0.0650	0.4158	0.8942	0.5436	2.0364	1.9159
29-Jul	0.0030	0.0091	0.0265	0.9920	0.9537	0.8883	0.1331	0.4098	1.1904	1.2036	2.2389	3.0338
30-Jul	0.0017	0.0078	0.0206	0.9937	0.9615	0.9089	0.0793	0.3583	0.9473	0.7734	2.1672	2.8233
31-Jul	0.0009	0.0074	0.0195	0.9946	0.9688	0.9284	0.0405	0.3470	0.9148	0.4241	2.3075	3.1438

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DATE	DAILY PROPORTIONS			CUMULATIVE PROPORTIONS			MEAN DATE COMPONENTS			VARIANCE COMPONENTS		
	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums	Maximums	Averages	Minimums
01-Aug	0.0015	0.0056	0.0110	0.9961	0.9744	0.9394	0.0710	0.2690	0.5298	0.7941	1.9551	2.0743
02-Aug	0.0015	0.0047	0.0099	0.9975	0.9792	0.9494	0.0724	0.2327	0.4866	0.8641	1.8396	2.1485
03-Aug	0.0006	0.0036	0.0061	0.9982	0.9828	0.9554	0.0308	0.1789	0.3032	0.3904	1.5297	1.4966
04-Aug	0.0011	0.0031	0.0058	0.9993	0.9858	0.9612	0.0565	0.1557	0.2957	0.7597	1.4345	1.6188
05-Aug	0.0001	0.0019	0.0039	0.9994	0.9877	0.9651	0.0064	0.0991	0.2010	0.0910	0.9805	1.2122
06-Aug	0.0000	0.0014	0.0035	0.9994	0.9892	0.9685	0.0000	0.0763	0.1837	0.0000	0.8075	1.2130
07-Aug	0.0000	0.0014	0.0035	0.9994	0.9906	0.9720	0.0000	0.0768	0.1871	0.0000	0.8668	1.3462
08-Aug	0.0001	0.0015	0.0051	0.9995	0.9921	0.9771	0.0068	0.0827	0.2822	0.1122	0.9919	2.2008
09-Aug	0.0000	0.0012	0.0030	0.9995	0.9933	0.9801	0.0000	0.0660	0.1679	0.0000	0.8387	1.4134
10-Aug	0.0001	0.0015	0.0055	0.9996	0.9947	0.9856	0.0070	0.0832	0.3115	0.1275	1.1177	2.8183
11-Aug	0.0002	0.0011	0.0036	0.9999	0.9958	0.9892	0.0143	0.0619	0.2087	0.2712	0.8780	2.0230
12-Aug	0.0001	0.0008	0.0020	1.0000	0.9966	0.9912	0.0073	0.0446	0.1180	0.1439	0.6651	1.2207
13-Aug	0.0000	0.0006	0.0012	1.0000	0.9972	0.9924	0.0000	0.0369	0.0705	0.0000	0.5787	0.7762
14-Aug	0.0000	0.0005	0.0009	1.0000	0.9977	0.9933	0.0000	0.0308	0.0540	0.0000	0.5066	0.6312
15-Aug	0.0000	0.0005	0.0014	1.0000	0.9982	0.9946	0.0000	0.0300	0.0844	0.0000	0.5163	1.0451
16-Aug	0.0000	0.0005	0.0014	1.0000	0.9986	0.9960	0.0000	0.0286	0.0858	0.0000	0.5146	1.1219
17-Aug	0.0000	0.0003	0.0010	1.0000	0.9989	0.9970	0.0000	0.0201	0.0653	0.0000	0.3772	0.9011
18-Aug	0.0000	0.0003	0.0008	1.0000	0.9992	0.9978	0.0000	0.0184	0.0531	0.0000	0.3610	0.7702
19-Aug	0.0000	0.0002	0.0008	1.0000	0.9994	0.9986	0.0000	0.0135	0.0539	0.0000	0.2745	0.8212
20-Aug	0.0000	0.0002	0.0001	1.0000	0.9996	0.9988	0.0000	0.0120	0.0083	0.0000	0.2535	0.1333
21-Aug	0.0000	0.0002	0.0005	1.0000	0.9998	0.9992	0.0000	0.0119	0.0329	0.0000	0.2609	0.5499
22-Aug	0.0000	0.0001	0.0003	1.0000	0.9998	0.9995	0.0000	0.0040	0.0185	0.0000	0.0920	0.3239
23-Aug	0.0000	0.0000	0.0000	1.0000	0.9998	0.9995	0.0000	0.0019	0.0000	0.0000	0.0451	0.0000
24-Aug	0.0000	0.0000	0.0001	1.0000	0.9999	0.9996	0.0000	0.0016	0.0038	0.0000	0.0382	0.0725
25-Aug	0.0000	0.0000	0.0002	1.0000	0.9999	0.9997	0.0000	0.0021	0.0114	0.0000	0.0535	0.2245
26-Aug	0.0000	0.0000	0.0000	1.0000	0.9999	0.9997	0.0000	0.0016	0.0000	0.0000	0.0406	0.0000
27-Aug	0.0000	0.0000	0.0001	1.0000	1.0000	0.9998	0.0000	0.0026	0.0050	0.0000	0.0699	0.1073
28-Aug	0.0000	0.0000	0.0001	1.0000	1.0000	0.9999	0.0000	0.0026	0.0102	0.0000	0.0719	0.2256
29-Aug	0.0000	0.0000	0.0001	1.0000	1.0000	1.0000	0.0000	0.0008	0.0052	0.0000	0.0226	0.1184
	1.0000	1.0000	1.0000				MEAN OF MAXIMUMS 24.82	MEAN OF AVERAGES 29.32	MEAN OF MINIMUMS 34.29	VAR = S.D. =	72.42 8.51	

Appendix G.1. Chinook salmon brood year table (1988 revised), Kogrukluk River, 1969-1988.

Brood Year	Number of Spawners a	Age of Brood Year Cohort at Time of Return					Weir Returns From Each Cohort b	Weir Return Per Spawner
		1.1	1.2	1.3	1.4	1.5		
1969	-	c	c	c	c	17	c	
1970	3912	c	c	c	3067	33	c	
1971	-	c	c	2298	1418	0	c	
1972	3258	c	419	424	9915	0	10758	3.30
1973	4734	17	70	1387	2444	519	4437	0.94
1974	-	0	2299	1770	940	202	5211	-
1975	3844	0	7206	3128	9874	682	20890	5.43
1976	5818	0	1985	5652	7043	132	14812	2.55
1977	1945	0	1092	2583	1532	192	5399	2.78
1978	13601	0	1840	715	1370	133	4058	0.30
1979	11420	37	607	2311	2006	247	5208	0.46
1980	6572	6	1040	1540	1164	37	3787	0.58
1981	16820	15	759	2506	1978	967	6225	0.37
1982	12185	0	373	1008	3482	-	4863	0.40
1983	2992	6	1040	5739	-	-	-	-
1984	4928	0	1006	-	-	-	-	-
1985	4438	0	-	-	-	-	-	-
1986	4296	-	-	-	-	-	-	-
1987 d	4063	-	-	-	-	-	-	-
1988	11194							

- a Escapements prior to 1976 were estimated from tower counts. Comparability was obtained in 1977 when both tower and weir were operated successfully.
- b Dominant age classes (1.2, 1.3, 1.4) are minimally used to estimate total weir return by cohort.
- c Incomplete data on cohort returns.
- d Weir counts in 1987 were insufficient to estimate escapements. However, 1977 aerial, 1988 aerial, and 1988 weir data was used to estimate the weir escapement.

Appendix G.2. Sockeye salmon brood year table (1988 revised), Kogruklu River, 1969-1988.

Brood Year	Number of Spawners a	Age of Brood Year Cohort at Time of Return b			Weir Returns From Each Cohort c	Weir Return Per Spawner
		1.2	1.3	1.4		
1969	-	d	d	d	d	d
1970	-	d	d	14	d	d
1971	-	d	2352	0	d	d
1972	-	0	1637	116	1753	-
1973	-	0	1542	6	1548	-
1974	-	41	470	0	511	-
1975	-	0	3200	0	3200	-
1976	2366	0	13937	2614	16551	7.00
1977	1637	4140	19442	53	23635	14.44
1978	1699	100	845	108	1053	0.62
1979	476	278	3972	149	4399	9.24
1980	3200	50	3885	104	4039	1.26
1981	18077	332	3995	0	4327	0.24
1982	22156	80	951	131	1162	0.05
1983	1176	22	5839	-	5861	4.98
1984	4130	113	-	-	-	-
1985	4366	-	-	-	-	-
1986	4179	-	-	-	-	-
1987 e	973	-	-	-	-	-
1988	6083	-	-	-	-	-

a Tower counts of sockeye salmon prior to 1976 are unreliable as indicators of escapement magnitude

b Minor age classes are lumped with the appropriate dominant age classes for this analysis.

c Total return is estimated as the sum of the returning age classes, i.e. 1.2, 1.3, and 1.4.

d Incomplete data on cohort returns.

e Weir counts in 1987 were insufficient to estimate escapements; however, 1987 aerial, 1988 aerial, and 1988 weir data were used to estimate the escapement.

Appendix G.3. Chum salmon brood year table (1988 revised), Kogrukluk River, 1969-1988.

Brood Year	Number of Spawners a	Age of Brood Year Cohort at Time of Return				Weir Returns From Each Cohort b	Weir Return Per Spawner
		0.2	0.3	0.4	0.5		
1969	-	c	c	c	c	-	-
1970	-	c	c	c	0	-	-
1971	-	c	c	5261	1419	-	-
1972	-	c	3114	5814	0	8928	-
1973	-	42	12211	25975	0	38228	-
1974	-	0	22251	571	0	22822	-
1975	-	784	3989	4512	0	9285	-
1976	8417	276	37265	49570	318	87429	10.39
1977	19444	0	7803	22839	160	30802	1.58
1978	49010	0	56423	7130	1162	64715	1.32
1979	4836	0	2079	8089	86	10254	2.12
1980	41777	38	32233	11855	388	44514	1.07
1981	57373	0	5206	4266	1411	10883	0.19
1982	79580	34	10795	12091	809	23729	0.30
1983	9407	62	3920	12072	-	16054	1.71
1984	41484	0	29000	-	-	-	-
1985	17181	0	-	-	-	-	-
1986	15511	-	-	-	-	-	-
1987 d	17422	-	-	-	-	-	-
1988	41881	-	-	-	-	-	-

a Tower counts of chum salmon prior to 1976 are unreliable as indicators of escapement magnitude.

b Dominant age classes (0.3 and 0.4) are minimally used to estimate total weir return by cohort.

c Incomplete data on cohort returns.

d Weir counts in 1987 were insufficient to estimate escapements; however, 1987 aerial, 1988 aerial, and 1988 weir data was used to estimate the weir escapement.

Appendix H.1. Length frequencies of male chinook, Kogrukluk River, 1988.

SEX = MALES
 MINIMUM LENGTH FOR THIS SEX = 405
 MAXIMUM LENGTH FOR THIS SEX = 1005
 MEAN LENGTH FOR THIS SEX = 721.46
 HISTOGRAM CELL WIDTH SELECTED = 10
 LOWER BOUND OF CELL NO. 1 = 400
 TOTAL NUMBER OF CELLS = 61

CELL NO.	==LENGTH INTERVAL==	FREQUENCY.....
1	400.00 < 410.00	1 =
2	410.00 < 420.00	0
3	420.00 < 430.00	0
4	430.00 < 440.00	0
5	440.00 < 450.00	1 =
6	450.00 < 460.00	2 ==
7	460.00 < 470.00	2 ==
8	470.00 < 480.00	2 ==
9	480.00 < 490.00	2 ==
10	490.00 < 500.00	1 =
11	500.00 < 510.00	2 ==
12	510.00 < 520.00	2 ==
13	520.00 < 530.00	6 =====
14	530.00 < 540.00	3 ===
15	540.00 < 550.00	7 =====
16	550.00 < 560.00	6 =====
17	560.00 < 570.00	7 =====
18	570.00 < 580.00	9 =====
19	580.00 < 590.00	4 ====
20	590.00 < 600.00	5 =====
21	600.00 < 610.00	12 =====
22	610.00 < 620.00	8 =====
23	620.00 < 630.00	9 =====
24	630.00 < 640.00	9 =====
25	640.00 < 650.00	8 =====
26	650.00 < 660.00	14 =====
27	660.00 < 670.00	16 =====
28	670.00 < 680.00	28 =====
29	680.00 < 690.00	31 =====
30	690.00 < 700.00	14 =====
31	700.00 < 710.00	26 =====
32	710.00 < 720.00	36 =====
33	720.00 < 730.00	33 =====
34	730.00 < 740.00	22 =====
35	740.00 < 750.00	16 =====
36	750.00 < 760.00	29 =====
37	760.00 < 770.00	29 =====
38	770.00 < 780.00	27 =====
39	780.00 < 790.00	18 =====
40	790.00 < 800.00	12 =====
41	800.00 < 810.00	17 =====
42	810.00 < 820.00	16 =====
43	820.00 < 830.00	5 =====
44	830.00 < 840.00	10 =====
45	840.00 < 850.00	7 =====
46	850.00 < 860.00	14 =====
47	860.00 < 870.00	8 =====
48	870.00 < 880.00	9 =====
49	880.00 < 890.00	6 =====
50	890.00 < 900.00	0
51	900.00 < 910.00	4 ====
52	910.00 < 920.00	6 =====
53	920.00 < 930.00	5 =====
54	930.00 < 940.00	3 ===
55	940.00 < 950.00	1 =
56	950.00 < 960.00	1 =
57	960.00 < 970.00	1 =
58	970.00 < 980.00	1 =
59	980.00 < 990.00	1 =
60	990.00 < *****	1 =
61	***** < *****	1 =

Appendix H.2. Length frequencies of female chinook, Kogrukluk River, 1988.

SEX = FEMALES
 MINIMUM LENGTH FOR THIS SEX = 520
 MAXIMUM LENGTH FOR THIS SEX = 1002
 MEAN LENGTH FOR THIS SEX = 864.21
 HISTOGRAM CELL WIDTH SELECTED = 10
 LOWER BOUND OF CELL NO. 1 = 400
 TOTAL NUMBER OF CELLS = 61

CELL NO.	==LENGTH INTERVAL==	FREQUENCY.....
1	400.00 < 410.00	0
2	410.00 < 420.00	0
3	420.00 < 430.00	0
4	430.00 < 440.00	0
5	440.00 < 450.00	0
6	450.00 < 460.00	0
7	460.00 < 470.00	0
8	470.00 < 480.00	0
9	480.00 < 490.00	0
10	490.00 < 500.00	0
11	500.00 < 510.00	0
12	510.00 < 520.00	0
13	520.00 < 530.00	1 =
14	530.00 < 540.00	0
15	540.00 < 550.00	0
16	550.00 < 560.00	0
17	560.00 < 570.00	0
18	570.00 < 580.00	0
19	580.00 < 590.00	0
20	590.00 < 600.00	0
21	600.00 < 610.00	0
22	610.00 < 620.00	0
23	620.00 < 630.00	0
24	630.00 < 640.00	0
25	640.00 < 650.00	1 =
26	650.00 < 660.00	0
27	660.00 < 670.00	0
28	670.00 < 680.00	0
29	680.00 < 690.00	0
30	690.00 < 700.00	1 =
31	700.00 < 710.00	0
32	710.00 < 720.00	1 =
33	720.00 < 730.00	1 =
34	730.00 < 740.00	0
35	740.00 < 750.00	2 ==
36	750.00 < 760.00	3 ===
37	760.00 < 770.00	2 ==
38	770.00 < 780.00	4 ====
39	780.00 < 790.00	15 =====
40	790.00 < 800.00	4 ====
41	800.00 < 810.00	15 =====
42	810.00 < 820.00	18 =====
43	820.00 < 830.00	28 =====
44	830.00 < 840.00	21 =====
45	840.00 < 850.00	20 =====
46	850.00 < 860.00	23 =====
47	860.00 < 870.00	21 =====
48	870.00 < 880.00	17 =====
49	880.00 < 890.00	33 =====
50	890.00 < 900.00	15 =====
51	900.00 < 910.00	31 =====
52	910.00 < 920.00	14 =====
53	920.00 < 930.00	18 =====
54	930.00 < 940.00	12 =====
55	940.00 < 950.00	7 =====
56	950.00 < 960.00	13 =====
57	960.00 < 970.00	5 =====
58	970.00 < 980.00	5 =====
59	980.00 < 990.00	2 ==
60	990.00 < *****	1 =
61	***** < *****	2 ==

Appendix H.3. Length frequencies of male sockeye, Kogrukluk River, 1988.

SEX = MALES
 MINIMUM LENGTH FOR THIS SEX = 525
 MAXIMUM LENGTH FOR THIS SEX = 660
 MEAN LENGTH FOR THIS SEX = 588.01
 HISTOGRAM CELL WIDTH SELECTED = 5
 LOWER BOUND OF CELL NO. 1 = 495
 TOTAL NUMBER OF CELLS = 34

CELL NO.	==LENGTH INTERVAL==	FREQUENCY.....
1	495.00 < 500.00	0
2	500.00 < 505.00	0
3	505.00 < 510.00	0
4	510.00 < 515.00	0
5	515.00 < 520.00	0
6	520.00 < 525.00	0
7	525.00 < 530.00	1 =
8	530.00 < 535.00	1 =
9	535.00 < 540.00	0
10	540.00 < 545.00	3 ==
11	545.00 < 550.00	2 ==
12	550.00 < 555.00	5 =====
13	555.00 < 560.00	8 =====
14	560.00 < 565.00	5 =====
15	565.00 < 570.00	12 =====
16	570.00 < 575.00	18 =====
17	575.00 < 580.00	20 =====
18	580.00 < 585.00	15 =====
19	585.00 < 590.00	20 =====
20	590.00 < 595.00	10 =====
21	595.00 < 600.00	24 =====
22	600.00 < 605.00	18 =====
23	605.00 < 610.00	10 =====
24	610.00 < 615.00	8 =====
25	615.00 < 620.00	9 =====
26	620.00 < 625.00	12 =====
27	625.00 < 630.00	7 =====
28	630.00 < 635.00	4 =====
29	635.00 < 640.00	1 =
30	640.00 < 645.00	0
31	645.00 < 650.00	0
32	650.00 < 655.00	1 =
33	655.00 < 660.00	0
34	660.00 < 665.00	1 =

Appendix H.4. Length frequencies of female sockeye, Kogrukluk River, 1988.

SEX = FEMALES
 MINIMUM LENGTH FOR THIS SEX = 495
 MAXIMUM LENGTH FOR THIS SEX = 615
 MEAN LENGTH FOR THIS SEX = 541.41
 HISTOGRAM CELL WIDTH SELECTED = 5
 LOWER BOUND OF CELL NO. 1 = 495
 TOTAL NUMBER OF CELLS = 25

CELL NO.	==LENGTH INTERVAL==	FREQUENCY.....
1	495.00 < 500.00	2 ==
2	500.00 < 505.00	6 =====
3	505.00 < 510.00	2 ==
4	510.00 < 515.00	3 ===
5	515.00 < 520.00	10 =====
6	520.00 < 525.00	10 =====
7	525.00 < 530.00	9 =====
8	530.00 < 535.00	12 =====
9	535.00 < 540.00	16 =====
10	540.00 < 545.00	26 =====
11	545.00 < 550.00	17 =====
12	550.00 < 555.00	31 =====
13	555.00 < 560.00	11 =====
14	560.00 < 565.00	13 =====
15	565.00 < 570.00	5 =====
16	570.00 < 575.00	5 =====
17	575.00 < 580.00	6 =====
18	580.00 < 585.00	0
19	585.00 < 590.00	0
20	590.00 < 595.00	1 =
21	595.00 < 600.00	2 ==
22	600.00 < 605.00	0
23	605.00 < 610.00	0
24	610.00 < 615.00	0
25	615.00 < 620.00	1 =

Appendix H.5. Length frequencies of male coho, Kogrukluk River, 1988.

SEX = MALES
 MINIMUM LENGTH FOR THIS SEX = 410
 MAXIMUM LENGTH FOR THIS SEX = 640
 MEAN LENGTH FOR THIS SEX = 567.30
 HISTOGRAM CELL WIDTH SELECTED = 5
 LOWER BOUND OF CELL NO. 1 = 410
 TOTAL NUMBER OF CELLS = 47

CELL NO.	==LENGTH INTERVAL==	FREQUENCY.....
1	410.00 < 415.00	1 =
2	415.00 < 420.00	0
3	420.00 < 425.00	0
4	425.00 < 430.00	0
5	430.00 < 435.00	0
6	435.00 < 440.00	0
7	440.00 < 445.00	1 =
8	445.00 < 450.00	1 =
9	450.00 < 455.00	0
10	455.00 < 460.00	0
11	460.00 < 465.00	2 ==
12	465.00 < 470.00	0
13	470.00 < 475.00	3 ===
14	475.00 < 480.00	1 =
15	480.00 < 485.00	2 ==
16	485.00 < 490.00	2 ==
17	490.00 < 495.00	7 =====
18	495.00 < 500.00	1 =
19	500.00 < 505.00	5 =====
20	505.00 < 510.00	8 =====
21	510.00 < 515.00	5 =====
22	515.00 < 520.00	8 =====
23	520.00 < 525.00	8 =====
24	525.00 < 530.00	9 =====
25	530.00 < 535.00	14 =====
26	535.00 < 540.00	12 =====
27	540.00 < 545.00	22 =====
28	545.00 < 550.00	17 =====
29	550.00 < 555.00	34 =====
30	555.00 < 560.00	14 =====
31	560.00 < 565.00	22 =====
32	565.00 < 570.00	28 =====
33	570.00 < 575.00	46 =====
34	575.00 < 580.00	19 =====
35	580.00 < 585.00	38 =====
36	585.00 < 590.00	25 =====
37	590.00 < 595.00	38 =====
38	595.00 < 600.00	31 =====
39	600.00 < 605.00	34 =====
40	605.00 < 610.00	17 =====
41	610.00 < 615.00	21 =====
42	615.00 < 620.00	11 =====
43	620.00 < 625.00	10 =====
44	625.00 < 630.00	2 ==
45	630.00 < 635.00	3 ===
46	635.00 < 640.00	1 =
47	640.00 < 645.00	2 ==

Appendix H.6. Length frequencies of female coho, Kogrukluk River, 1988.

SEX = FEMALES
 MINIMUM LENGTH FOR THIS SEX = 495
 MAXIMUM LENGTH FOR THIS SEX = 670
 MEAN LENGTH FOR THIS SEX = 568.55
 HISTOGRAM CELL WIDTH SELECTED = 5
 LOWER BOUND OF CELL NO. 1 = 495
 TOTAL NUMBER OF CELLS = 36

CELL NO.	==LENGTH INTERVAL==	FREQUENCY.....
1	495.00 < 500.00	1 =
2	500.00 < 505.00	1 =
3	505.00 < 510.00	1 =
4	510.00 < 515.00	2 ==
5	515.00 < 520.00	1 =
6	520.00 < 525.00	6 =====
7	525.00 < 530.00	5 =====
8	530.00 < 535.00	12 =====
9	535.00 < 540.00	9 =====
10	540.00 < 545.00	16 =====
11	545.00 < 550.00	13 =====
12	550.00 < 555.00	40 =====
13	555.00 < 560.00	17 =====
14	560.00 < 565.00	45 =====
15	565.00 < 570.00	23 =====
16	570.00 < 575.00	47 =====
17	575.00 < 580.00	30 =====
18	580.00 < 585.00	37 =====
19	585.00 < 590.00	19 =====
20	590.00 < 595.00	31 =====
21	595.00 < 600.00	16 =====
22	600.00 < 605.00	18 =====
23	605.00 < 610.00	8 =====
24	610.00 < 615.00	12 =====
25	615.00 < 620.00	3 ==
26	620.00 < 625.00	1 =
27	625.00 < 630.00	1 =
28	630.00 < 635.00	1 =
29	635.00 < 640.00	0
30	640.00 < 645.00	0
31	645.00 < 650.00	0
32	650.00 < 655.00	0
33	655.00 < 660.00	0
34	660.00 < 665.00	0
35	665.00 < 670.00	0
36	670.00 < 675.00	1 =

Appendix H.7. Length frequencies of male chum, Kogrukluk River, 1988.

SEX = MALES
 MINIMUM LENGTH FOR THIS SEX = 510
 MAXIMUM LENGTH FOR THIS SEX = 670
 MEAN LENGTH FOR THIS SEX = 583.79
 HISTOGRAM CELL WIDTH SELECTED = 5
 LOWER BOUND OF CELL NO. 1 = 495
 TOTAL NUMBER OF CELLS = 36

CELL NO.	==LENGTH INTERVAL==	FREQUENCY.....
1	495.00 < 500.00	0
2	500.00 < 505.00	0
3	505.00 < 510.00	0
4	510.00 < 515.00	2 ==
5	515.00 < 520.00	4 ====
6	520.00 < 525.00	1 =
7	525.00 < 530.00	4 ====
8	530.00 < 535.00	3 ===
9	535.00 < 540.00	1 =
10	540.00 < 545.00	9 =====
11	545.00 < 550.00	6 =====
12	550.00 < 555.00	17 =====
13	555.00 < 560.00	16 =====
14	560.00 < 565.00	19 =====
15	565.00 < 570.00	26 =====
16	570.00 < 575.00	45 =====
17	575.00 < 580.00	28 =====
18	580.00 < 585.00	33 =====
19	585.00 < 590.00	28 =====
20	590.00 < 595.00	28 =====
21	595.00 < 600.00	33 =====
22	600.00 < 605.00	31 =====
23	605.00 < 610.00	18 =====
24	610.00 < 615.00	16 =====
25	615.00 < 620.00	20 =====
26	620.00 < 625.00	15 =====
27	625.00 < 630.00	5 =====
28	630.00 < 635.00	9 =====
29	635.00 < 640.00	6 =====
30	640.00 < 645.00	2 ==
31	645.00 < 650.00	0
32	650.00 < 655.00	1 =
33	655.00 < 660.00	4 ====
34	660.00 < 665.00	0
35	665.00 < 670.00	0
36	670.00 < 675.00	1 =

Appendix H.8. Length frequencies of female chum, Kogrukluk River, 1988.

SEX = FEMALES
 MINIMUM LENGTH FOR THIS SEX = 495
 MAXIMUM LENGTH FOR THIS SEX = 620
 MEAN LENGTH FOR THIS SEX = 550.56
 HISTOGRAM CELL WIDTH SELECTED = 5
 LOWER BOUND OF CELL NO. 1 = 495
 TOTAL NUMBER OF CELLS = 26

CELL NO.	==LENGTH INTERVAL==	FREQUENCY.....
1	495.00 < 500.00	2 ==
2	500.00 < 505.00	0
3	505.00 < 510.00	5 =====
4	510.00 < 515.00	3 ===
5	515.00 < 520.00	5 =====
6	520.00 < 525.00	14 =====
7	525.00 < 530.00	11 =====
8	530.00 < 535.00	14 =====
9	535.00 < 540.00	18 =====
10	540.00 < 545.00	23 =====
11	545.00 < 550.00	18 =====
12	550.00 < 555.00	28 =====
13	555.00 < 560.00	7 =====
14	560.00 < 565.00	11 =====
15	565.00 < 570.00	22 =====
16	570.00 < 575.00	11 =====
17	575.00 < 580.00	7 =====
18	580.00 < 585.00	9 =====
19	585.00 < 590.00	11 =====
20	590.00 < 595.00	4 =====
21	595.00 < 600.00	2 ==
22	600.00 < 605.00	1 =
23	605.00 < 610.00	2 ==
24	610.00 < 615.00	1 =
25	615.00 < 620.00	4 =====
26	620.00 < 625.00	1 =
